VETERINARY MEDICINE

JULY 1946

CONTENTS

Veterinary Progress, Policies and Comment

Raw Clams Inactivate Thiamin, 221; Investigation of Army Food Waste, 221; Consultants for Army Veterinary Corps, 221; Discovery That Texas Fever Transmitted by Ticks Erroneously Credited to Theobald Smith, 221; Case Memorial Library, 222; Poultry Income, 222; Eggs Incubated, 222; Hatchery History, 222; Calcium in Egg Shells, 222; Wight Retires from Bureau, 222; Preservation of Eggs, 222; A.V.M.A. Meeting, 223; Jen-Sal-Vick Chemical Merger, 223; Canine Longevity, 223; Ringworm Infection, 224; Occurrence of Rabies, 224; Leptospira Treatment, 224; New Antiseptic, 224; Award for Virus Discovery, 224; DDT Soap, 224; Serum for Pertussis, 224; Prostigmine, 224; Streptomycin Regulations, 224; Supplementary List of Separations from the Service of Veterinary Officers, 225; Temperature and Shock, 235; Streptomycin Stable, 244; Restrictions on Use of Streptomycin, 244.

Mixed Bacterial Infections in Dogs 227

Increasing Source of Uninspected Meat 228

Unfilled Gaps in Food Hygiene 228

Diabetes Mellitus in Dogs 230

Improve Our Veterinary Conferences 232

Veterinarian as Jap Prisoner 233

Cesarean Section at Sea 238

Dairy Cattle Practice 240

Insemination of Range Cattle 243

Recent Views on Nutrition 245

Diagnosis of Swine Erysipelas 248

Veterinary Practice 250

Clinical Reports 253-258

Osteogenic Sarcoma in a Dog, 253; Intestinal Prolapse After Laparotomy, 253; A 150-Pound Calf, 254; Lymphocytoma in a Cow, 254; Endocarditis in a Steer, 255; Hematoma in a Dog, 255; Rupture of Jugular Vein, 256; Staphyloma in a Dog, 257; Lead-Arsenic-Phosphorus Poisoning in a Cow, 257.

Abstracts 259-260

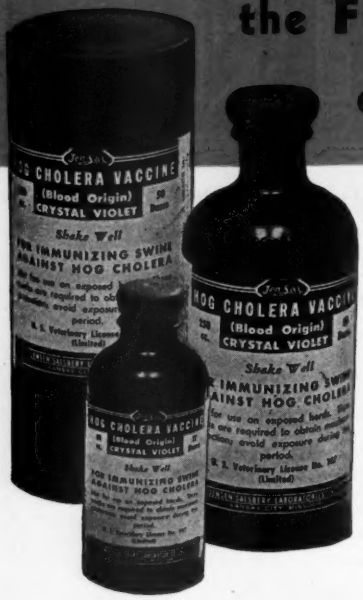
Control of Disease in Sheep, 259; Malayan Virus Disease of Fowl, 259; Tick-Bite Infection in Lambs, 259; Immunization Against Hog Cholera, 259; Symptoms of Brain Lesions, 260; Phenothiazine Trial in Calves, 260; Retained Placenta in Water Buffalo, 260; Induction of Lactation in Cows, 260; Stilbestrol in Canine Practice, 260.

VOL. XLI
No. 7

Entered as second-class matter Nov. 8, 1920, at the post office at Chicago, Ill., under the Act of March 3, 1879.

7632 S. Crandon Ave.
Chicago 49, U.S.A.

Cholera Protection without the FIELD HAZARDS of Virulent Virus Usage



AVAILABLE TO QUALIFIED VETERINARIANS ONLY . . . this sterile, nonviable vaccine confers protection of an average eight months' duration when used in a 5 cc. dose on non-exposed healthy swine of all ages—except pigs weaned less than two weeks.

HOG CHOLERA VACCINE

BLOOD ORIGIN

Crystal Violet

Jen-Sal Crystal Violet Vaccine is a carefully standardized and scientifically sound immunizing agent. All lots are safety and potency tested on live pigs—according to B.A.I. specifications—before release for sale.

At once safe and dependable, this new cholera prophylactic, now backed by extensive field usage, opens up new possibilities for veterinary service to the nation's swine industry.

AVAILABLE IN:

Vial 60 cc. (12 doses) Code: VIVAC $2.88

Vial 250 cc. (50 doses) Code: VILET 12.00

JENSEN-SALSBERY LABORATORIES, INC. KANSAS CITY MISSOURI

Write today for an informative booklet and reprints of printed literature.

VETERINARY MEDICINE

Registered in U. S. Patent Office

VOL. XLI JULY, 1946 No. 7

Published Monthly by the

VETERINARY MAGAZINE CORPORATION

7632 S. CRANDON AVE., CHICAGO 49, ILL., U.S.A.

$4.00 a year; per copy 50 cents; Special Issues $1.00

All matter appearing in this publication is copyrighted. No part of it may be reproduced without specific permission. Permission will be given if the purpose is unobjectionable. If there be any question as to the propriety of reproduction the author will be consulted.

Entered as second-class matter Nov. 8, 1920, at the post office at Chicago, Ill., under the Act of March 3, 1879. Entered as second-class matter under the title of American Journal of Veterinary Medicine July 19, 1910, at Chicago, Ill., under the Act of March 3, 1879.

D. M. CAMPBELL, *Editor*
7632 S. Crandon Ave., Chicago 49, Ill.
Telephone South Shore 7160

H. J. MOSTYN, *Eastern Representative*
P. O. Box 121, Sussex, New Jersey
Telephone Sussex 2F18

COPYRIGHTED, 1946, BY VETERINARY MAGAZINE CORPORATION

Raw clams as well as some kinds of raw fish inactivate thiamin, and presumably would cause Chastek paralysis if fed to foxes—perhaps man also might suffer vitamin B_1 deficiency if raw clams were included regularly in his diet.

* * * *

A nine-man civilian committee of food experts was appointed by Secretary of War Patterson last September to investigate charges that the Army wasted food. In its report, just made, the committee charged that the Army overstocked food, wasted it and cooked it poorly. BUT the committee commended the Army for (1) the good quality of the provisions purchased at (2) great economy and (3) for good storage of food. Those are the three points at which the Army veterinary service supervised the food.

* * * *

Consultants for Army Veterinary Corps

The system of utilizing professional consultants developed by the Surgeon General of the Army during the war and employed by the medical and sanitary corps with conspicuous success, will be continued and extended to include the dental and veterinary corps.

Professional consultants will be either commissioned in the Officers Reserve Corps and ordered to active duty as their services may be required or employed in a civilian status.

Recommendations for appointment as professional consultant in the dental and veterinary corps will be made by the senior officers in those corps. Professional consultants will not be placed on duty without their consent.

Hardesty (*So. Med. J.* 38:411, 1945) reported improvement of the eyeball from subconjunctival injection of penicillin together with systemic penicillin therapy in endopthalmitis due to penetrating wounds.

* * * *

In a discussion of tick fever at the Atlantic City meeting of the A.V.M.A. in 1901, Dr. D. E. Salmon, then Chief of the Bureau of Animal Industry, said: "The credit for discovering that Texas fever is transmitted by ticks has been given most of all to Dr. Theobald Smith and secondly to Dr. F. L. Kilborne. I know all the facts, and I want to say that Doctor Smith does not deserve any of the credit for that part of the investigation."

* * * *

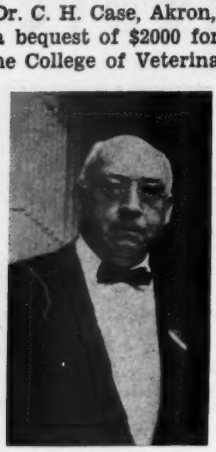
Fur Farmers Lose to UNRRA

Owing to beef being in scarce supply during the War and since, there has been a steady increase in the demand for horse meat for incorporation in dog feed. This is a matter of considerable concern to the fur farming industry in which horse flesh has all along constituted the principle meat ration.

The decision of the UNRRA to purchase 40 million pounds of horse meat in this country for famine relief is viewed with consternation by the fur ranchers, who see in it a further reduction of 80,000 in the dwindling supply of meat horses. However, since UNRRA pays about four times the fur ranch price for horse meat and all animals slaughtered must pass federal inspection it gets a better class of horses than the fur industry which will feel the loss more in two to five years from now than at present.

Case Memorial Library at O.S.U.

The late Dr. C. H. Case, Akron, O., provided in his will a bequest of $2000 for a memorial library in the College of Veterinary Medicine,



Dr. C. H. Case

Ohio State University, from which he was graduated in 1904. The gift is to be known as the Claude H. Case and John F. Planz Library Foundation. Doctor Planz, also OSU '04, was a member of the long-time partnership of Case and Planz in Akron, and has continued the practice since Doctor Case's death.

Doctor Case died of a heart attack at a railway station in Chicago, Aug. 27, 1944, as he was about to entrain for home after attending the AVMA meeting which had just closed.

* * * *

The commercial hatchery industry began in 1873. The introduction of mammoth incubators in 1918 and acceptance of baby chicks for mailing started the enormous development of the past three decades. After 16 years (1934) the hatcheries produced 453,000,000 chicks or 50% of the total hatched in that year. In 1945 they hatched more than a billion 600 million chicks, 85% of the total.

* * * *

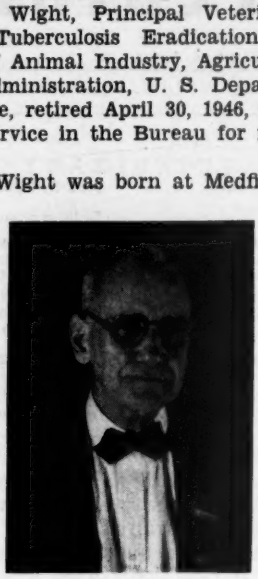
Eggs Require Vast Tonnage of Calcium

Dr. H. R. Bird, U. S. Department of Agriculture, estimates that, in 1945, the hens of the United States required about 320,000 tons (10,000 car loads) of calcium to put proper shells on the eggs they laid. Phosphorus, manganese, and several other mineral elements are likewise essential in poultry feeding. Diets usually recommended for laying hens contain about 2.25% of calcium and 0.75% of phosphorus; those for growing chickens contain about 1% of calcium and 0.6% of phosphorus.

Wight Retires from the Bureau

Having attained the age of 70, Dr. Alexander E. Wight, Principal Veterinarian in Charge, Tuberculosis Eradication Division, Bureau of Animal Industry, Agricultural Research Administration, U. S. Department of Agriculture, retired April 30, 1946, after continuous service in the Bureau for more than 47 years.

Doctor Wight was born at Medfield, Mass.,



Dr. A. E. Wight

April 14, 1876, and was graduated from the Veterinary Division of Harvard University in 1897. He practiced at Medfield until he entered the Bureau December 15, 1898. His service in the Bureau included assignments in Massachusetts, the Dakotas, North Carolina, Arkansas, Louisiana, Missouri, Pennsylvania and Wisconsin. When the tuberculosis eradication project was undertaken by the Bureau in 1918 Doctor Wight was made Assistant Chief of the Division and succeeded Doctor Kiernan on the death of the latter (Dec. 13, 1927) to become chief of the Division, which position he has held for the past 18 years. At the time the project came under the direction of Doctor Wight only one state, North Carolina, was wholly within the modified accredited area.

Doctor Wight at different times was president of the U. S. Livestock Sanitary Association, the District of Columbia Veterinary Medical Association and the A. V. M. A.

* * * *

Statistics of the hatchery associations in the United States indicate from 30 to 40% of the approximately two-and-one-half billion eggs annually incubated in this country fail to hatch, entailing a loss to the poultry industry second only to loss from disease in embryonic life. The factor mainly responsible for failure to hatch is poor nutrition of the breeding stock.

Boston Meeting of A.V.M.A.

The American Veterinary Medical Association has announced plans for one of its largest meetings and one of its most extensive programs to be held in Boston, Aug. 19-22, 1946.

Plans call for the opening of the convention at Hotel Statler, Monday, Aug. 19, with sessions continuing through Thursday afternoon, Aug. 22. Prior to the formal opening of the convention, there will be several advance sessions of A. V. M. A. governing bodies Saturday and Sunday. These will include the meeting of the Board of Governors Saturday morning, the Council on Education Saturday afternoon and evening, and meetings of the Executive Board and various committees Sunday morning and afternoon.

The opening session of the convention proper will be held Monday afternoon, featuring the address of President Farquharson, the presentation of the 12th International Veterinary Congress prize, The Borden Award, The Humane Act Award and the nomination of officers. A second session of the House of Representatives will be held Monday evening.

Tuesday's program, Aug. 20, will be a general session in the morning, the Women's Auxiliary luncheon at noon, a general session at 2:00 p. m., and clinical depictions from 4:00 to 5:00 p. m. Tuesday evening there will be a moonlight cruise for convention delegates.

Sectional programs on general practice, sanitary science, and research are scheduled from 9:00 to 11:00 a. m. Wednesday, Aug. 21, and a general session from 11:15 a. m. to 12:15 p. m. Three more sectional meetings will be held Wednesday from 2:00 to 4:00 p. m., including surgery and obstetrics, small animals, and poultry. From 4:00 to 5:00 p. m. there will be a further program of clinical depictions. The annual banquet and president's reception and dance will be held Wednesday.

Sectional programs will be resumed at 9:00 a. m. Thursday, Aug. 22, featuring general practice, sanitary science and research. From 11:00 a. m. to 12:15 p. m. there will be a general session. From 2:00 to 4:00 p. m. there will be sectional meetings on surgery and obstetrics, small animals, and poultry, with clinical depictions from 4:00 to 5:00 p. m. The convention will close with installation of officers Thursday afternoon.

In addition to the convention proper there will be a number of meetings and conferences of affiliated and associated organizations including a conference on veterinary licensure, conference of delegates from student chapters of the A. V. M. A., a luncheon for Alpha Psi members, an informal gathering of the National Association of Federal Veterinarians, a meeting of veterinary officers, with Col. McCallam, new chief of the Veterinary Corps, a conference of Extension Veterinarians, and the annual meeting of the Women's Auxiliary.

The resumption of commercial, educational and technical exhibits is expected to add to the interest at this year's meeting. Several veterinary science departments have indicated their intentions to send technical exhibits depicting phases of research work which they are conducting. The Veterinary Section of the Army Medical Department will display an extensive exhibit, and there will also be exhibits illustrating some of the wartime research on animal and poultry diseases.

Veterinarians planning to attend the Boston convention should address the A. V. M. A. Housing Bureau, c/o Convention Bureau, Chamber of Commerce, 80 Federal Street, Boston 10, Mass., for hotel reservations as early as possible.

Jen-Sal-Vick Chemical Amalgamation

A merger of the Jensen-Salsbery Laboratories, Inc., Kansas City, and the Vick Chemical Co., New York, is announced as a part of a program of diversification of the Vick Chemical Co. and a program of expansion of the Jensen-Salsbery Laboratories.

There will be no change in Jen-Sal's policy of distribution to veterinarians only and no change in management or personnel is contemplated.

Since the future of the veterinary field lies in intensive scientific research and in the utilization of many products developed recently and still scarce, Jensen-Salsbery felt it advantageous to affiliate with larger sources. The merger will bring to Jensen-Salsbery the research and production facilities of the other enterprises which comprise the Vick Chemical Company and provide a continuing source of supply for the antibiotics and new biochemical products.

In a letter to Dr. Graham, W. Y. Preyer, president of the Vick Chemical Company, stated: "With the resources of the Vick organization, the expanding facilities of Jensen-Salsbery at Kansas City, and the strict adherence to the rigid Jensen-Salsbery policy of selling to qualified veterinarians only, even greater service to the livestock industry is assured. We pledge to you and to veterinarians everywhere the same loyal support rendered to other ethical groups we have the pleasure to serve."

Szegiao-han meaning "four legs cold" is the Chinese farmers' name for a virus disease that kills large numbers of water buffalo. When an animal contracts the disease the farmer finds it down with all four legs extending straight from the body, stiff and cold. Death occurs in a short time. According to Dr. T. S. Sheng of the National Central University, who determined the disease to be due to a virus, the mortality of szegiao-han is 95%.

Avian Pneumoencephalitis Conference

A conference was held in Washington May 2 and 3 at the call of Dr. B. T. Simms, Chief of the Bureau of Animal Industry, to discuss the situation arising from the presence of pneumoencephalitis in California and on the East Coast.

The conference was attended by about 100 representatives of the poultry industry, state livestock sanitary officials, poultry pathologists and officials of the Bureau. The discussion dealt with problems involving research, regulatory measures and the possible allotment of funds, available for the control of certain livestock diseases, for controlling diseases of poultry.

A recommendation was adopted that a survey be made to determine the extent of the infection in this country and a committee was selected to consider the recommendations made to the poultry industry by the poultry pathologists and regulatory officials.

The Unusual Case of Major Ozier

The award of the Army Commendation Ribbon to Maj. Terry S. Ozier continues to attract attention and arouse speculation. As told last month (*Vet. Med.* p. 186) the Army having 10 awards to distribute to veterinary officers gave one of them to Major Ozier, an emergency officer, and only nine to Regular Army Colonels!

The most popular explanation is, that in view of the enormous amount of work devolving upon the Surgeon General's Office, incident to the demobilization of seven million soldiers in less than a year, it would be surprising if occasional mistakes were not made.

Others think the explanation may lie in the change of head of the veterinary division of the Surgeon General's Office and predict that under the new director some more awards may go to that group of officers which comprised, during the war, 95% of all officers in the Veterinary Corps.

Others suggest different explanations. To date the Surgeon General's Office has vouchsafed none.

Wood Ticks by the Roadside

Recent studies on the American dog tick or eastern wood tick *(Dermacentor variabilis)* by entomologists of the U. S. Department of Agriculture have confirmed the previous observation that these pests, which are vectors of diseases of both animals and man, tend to congregate along paths and roads frequented by animals including man. The entomologists believe it is the scent of man and dogs and other animals which draws the ticks to the roadsides where the opportunity for finding a host is improved.

This characteristic of the wood tick facilitates its control since up to 80% of the ticks in an area may be killed by spraying the roadsides every few days with nicotine and soap spray or less often with DDT in soluble pine oil and water. Neither spray is harmful to vegetation.

Information on Cattle Disease Wanted

Real information as to the cause and treatment of black scours in cattle is wanted. A few cases of this ailment are seen in the winter months, but there is a greater prevalence in the spring and summer months. Only sporadic cases are seen here and there, only one or two cases on a farm, but they occur over my entire practice territory in all breeds of cattle, and in the fat as well as in those in poor condition. The first symptom noticed by the owner is fluid bowel passages. This is followed by a lessened appetite and lowered production in lactating cows.

The veterinarian finds copious, black, foul-smelling, liquid evacuations that are filled with bubbles of gas. From that time on dehydration is rapid; losses in weight ranging up to 400 pounds in a week. The appetite is very poor or in entire abeyance. Most of the animals will pick at forage mincingly but refuse grain and ground feed. Some affected animals will refuse almost all water; a few will drink more than a normal amount. The course of the disease varies considerably. The very severe cases nearly all die in from three to six days. Those not badly affected may show some evidence of the disease for from several days up to two months and many recover. The mortality is low but it seems none should die from a diarrhea if properly treated.

Necropsy reveals very little. The disease is almost lesionless. All of the intestinal mucous membrane is pale. The contents of the intestine and the residual in the rumen is about one-half the normal amount. All tissues show dehydration.—*S. L. S.*

Veterinary Corps Officers Separated Since VE-Day

(Supplement to lists previously published)

Alabama

Cloyd, Grover D.
Davidson, Wm. Max
Dobbs, William R.
Franklin, Ira I.

California

Baker, Jack Ed.
Berner, Waldemar T.
Camner, Murray H.
Cantwell, Howard S.
Chastain, Ernest F.
Clark, David S.
Cope, Russel P.
Dalzeiel, George T.
Henry, Jerrold N.
Jurden, Richard H.
Lee, Philip A.
Marold, Gordon J.
McFarland, Ray W.
McFarland, Robt. J.
Moxley, Elmer D.
Ogburn, Leonard L.
Ommert, Willard D.
Parrell, Hyman H.
Parshall, Chas. J.
Smith, Sydney M.
Stafford, Chas. D.
Steinmetz, Wm. Ed.
Vierheller, Ralph C.
Vietti, John D.
Weston, Ralph S.
Wixom, Herald Geo.

Colorado

Barrows, Ernest D.
Gorman, Harry A.
Hamman, Fred I.
Meyer, Joshua Forest
Ramsey, Donald D.
Tornow, Winston H.
Yount, Virgil A.

Connecticut

Larson, Raymond E.
McDonald, A. R.
Stern, Douglas N.
Winn, John Douglas

Washington, D. C.

Hudson, Claude

Florida

Foote, Lon E.
Knowles, Jack O.
Ausherman, Robert J.

Georgia

DeMilly, John W. Jr.
Hinson, Conrad Ray
Sacks, Sander A.
Slappey, Willard O.
Wise, Thomas M.

Idaho

Wheelin, Thos. J.

Illinois

Angerer, Wm. J.
Brown, James R.
Elwood, Guilford S.
Hampton, Glen G. Jr.
Hervey, William H.
Hinkle, Thomas C., Jr.
McCannon, Willis B.
Meyer, Frank Leroy
Miller, Walter W.
Peters, Max R.
Raudabaugh, W. G.
Rodabaugh, Don E.

Indiana

Fox, Murl A.
Spieth, Emmett W.

Iowa

Bartley, Frank E.
Burnham, Claire H.
Flickinger, Chas. Ray
Gathmann, Arthur C.
Greenfield, Alex.
Grell, Hans Adolph
Hanna, Harvey E. Jr.
Held, Harold E.
Jacobs, Robert C.
Koch, Emil L.
Koll, Carl H.
Marriott, John K.
Monlux, Andrew W.
Moore, Leslie J.
Morton, Lynus R.
Nelson, Clifford L.
Schmidt, Martin G.
Smit, Chas. Rudolph
Spaulding, Don. Lee
Tucker, Carl C.
Watson, Clement E.

Kansas

Beard, Theodore M.
Clark, Forrest W.
Coates, Albert S. Jr.
Curry, Philip H.
Eskeldson, James A.
Eyestone, Willard H.
Fieser, John Ed.
Havlik, Albert L.
Johnson, William P.
Monroe, Floyd Edw.
Parsons, Elton V.
Rippetoe, Culver W.
Rush, Loyal L.
Shea, Richard A.
Thomas, Roy Corley
Thompson, C. H. J.
Whitney, Don O.
Zinn, Glenn A.

Kentucky

Nickell, Vernie L.

Louisiana

Lank, Robert B.
Starnes, Mervyn B.

Maine

Scamman, Lucian H.

Maryland

Wohnsiedler, H. G.

Massachusetts

Fanning, James J.

Michigan

Caswell, Don Leroy
Davidson, Laurie R.
Henshaw, Russell J.
Houghton, Herbert R.
Israel, Irving
Rea, Robert Chas.
Reichert, Paul Fred
Sutton, Karl LeRoy
Viergutz, Herb Edw.
White, Paul T.
Winter, Alan W.

Minnesota

Bek, Gerald C.
Cavanaugh, Jos. Leo
Enge, Clifford O.
Hansen, Fred W., Jr.
Leonard, H. A.
Schwartz, A. V. Jr.

Mississippi

Chadwick, Chas. Wm.
Lindley, William H.

Missouri

Cassias, Chas. S.
Dicke, Walter Edw.
Dodd, Daniel P.
Hamilton, Clare C.
Hartzell, Harold P.
Patton, Glen Frank
Stepp, Forrest A.
Valentine, Harold D.

Montana

Gould, Clinton L.

Nebraska

Hargreaves, Richard E.
Leonard, George A.
Norden, Carl J., Jr.
Orton, Clifford T.

New Hampshire

Holmberg, Gerald W.
MacKenzie, Eugene R.

New Jersey

Ruck, Richard A.
Silverstein, E.
Todd, Wm. Chas., Jr.
Urban, William D.

New York

Berkowitz, Israel
Birch, Frank M.
Boldt, Vincent Leo
Cairns, Fred C.
Chazey, Edward P.
Faatz, Gerald A.
Favata, Anthony F.
Gumaer, Kenneth I.
McCarthy, Jas. J. Jr.
Merenda, Joseph J.
Milks, Richard Vose
Morris, Robert B.
Schiller, Harry
Steed, Donald John
Steffen, Rudolph J.
Thiele, Arthur R.

Hirschey, Wilbur C. — Tice, Albert K.
Jastremski, Maurice M. — Udall, Robert H.
Jewett, Robert F. — Van Wagenen, V. F.
Johnson, Norman H. — White, Howard S.

North Carolina

Allen, Jap C. — Cornwell, James Ira
Nitka, Anthony A.

North Dakota

Bjornson, Sidney S. — Loften, Robert D.

Ohio

Apple, Henry J. — Holmes, John M.
Barber, Russell A. — Johnson, Earl F.
Collier, John Ray — Jones, John Luther
Elliott, Berton J. — Linzinmeir, Chas. B.
Ferguson, Lloyd C. — McMahan, Ray L.
Finney, E. M. — Nagle, Albert C.
Gluhm, Frank N. — Pounden, Wm. D.
Ratchelder, Ray M.

Oklahoma

Boston, Lawrence D. — Molt, Fred L.
Wirtz, John H.

Oregon

Blake, Gordon W. — Kraft, James C.
Carter, Leland B. — Morehouse, Ed. W.
Hostetler, Roy I. — Oliver, Victor T.
Johnson, Norman Ed. — Sivyer, Roland E.

Pennsylvania

Burstein, Harold — Flack, George R.
Davies, Frank J. — Hummer, Robt. Leo
Davies, Frank J. — Ker, William Orr
Eagleman, James G. — Saturen, Israel M.
Walbert, Ben. L. Jr.

South Carolina

Parker, R. M. — Willis, Robert L.
Wiser, Keith Bud

South Dakota

Aldrich, Percy M. — VanMeveren, Arthur
Weaver, Gilbert S.

Tennessee

McKinney, Edgar B. Jr. — Seay, Lewis Edgar
Tellejohn, Arthur L.

Texas

Adams, James L. — Horn, Wiley Henry
Beckcom, Edwin A. Jr. — Leathers, Robert B.
Coburn, Geo. C. — Pollard, Morris
Gomez, Ralph Garcia — Schwarzenbach, H. F.
Einhorn, Ralph W. — Shull, Hubert T.
Heaton, James W. Jr. — Yarbrough, Paul R.

Vermont

Denton, Jack Irving

Virginia

Branch, Lemuel A. — Perkins, Fred Edw.
Koudelka, Thomas P. — Witter, Willis F.

Utah

Haynie, Fred B. — Henkel, Ernest L.

Washington

Christofferson, F. F. — McDole, Donald H.
Clarke, Don W. — McMonagle, Wm. D.
Clinton, Robert L. — Miller, Charles S.
Graff, Virgil E. — Saunders, Chas. M.
House, Donald D. — Smith, Edward B.
Ledgerwood, M. L. — Ward, Willard D.
Wittrock, Jack E.

Wisconsin

Boyer, Clyde I., Jr. — Jones, Raymond A.
Eastwold, John D. — McDermid, Arlye M.
Nebb, Samuel S.

Wyoming

Madsen, Peter E.

Address Unknown

Martin, Ellis J. — Nolan, Timothy F.
Richards, Jacob P. Jr.

New Substitute for "Veterinarian"

From the time Salmon left the office of Chief of the Bureau of Animal Industry till Miller entered it veterinarians employed in disease control and in research were "specialists" or "scientists" or "experts," in official releases informing the public of their achievements.

Other departments of the federal government and state colleges, experiment stations and departments of agriculture when they required the services of veterinarians, but did not want to acknowledge indebtedness to veterinary medicine, very largely followed the same custom; their veterinarians officially became specialists or scientists or were designated these terms with more or less original qualifications such as "government," "animal," "poultry" or "sanitary."

The University of Illinois, however, thought up a new one recently. As in other important states the loss due to bovine mastitis in Illinois is enormous. As an aid to the dairy industry of the state a "mastitis program" was developed which is in every way commendable. As part of the plan seven veterinarians were employed full time to work with veterinary practitioners and dairymen. Although their duties are strictly veterinary—concerned with animal disease control—they are not veterinarians any more. They are now "war food assistants." Of course there is no war and not too much food but that's what they are—war food assistants. One could be pardoned curiosity as to the degree the new College of Veterinary Medicine in Illinois will confer upon its graduates. The veterinary department in the University has long been the department of "Animal Pathology" and more recently of "Animal Pathology and Hygiene." Now that university field veterinarians are WFA's, it may be that D.V.M. will be found to be too indicative of their training.

Mixed Bacterial Infections in Dogs*

For many years the term distemper has been employed to designate a group of ailments in the dog induced by various combinations of organisms and presenting a variety of symptoms. This group of diseases was (and still is) called distemper regardless of whether it occurs as a sequel of virus distemper or independently. These ailments occur in dogs of all ages. Either the respiratory tracts or the digestive system may be primarily and principally involved.

Terming this group of ailments distemper is unfortunate and should be discontinued, now that the virus of Carrè has been isolated and a considerable amount of information concerning it has been learned. Mixed bacterial infections seems to be an appropriate name for the whole group as an *ad interim* term to be used until more is learned of their etiology and until the group can be broken down into some of its more important parts.

The number of organisms responsible for these infections is large, including various species and strains of Streptococcus, Staphylococcus, Salmonella and Pasteurella. The *Brucella bronchosepticus* probably should be placed first for frequency of occurrence and also for pathogenicity. An organism causing encephalitis also is important because of its destructiveness when present.

There are two types of these ailments—respiratory and gastrointestinal.

The respiratory type is ushered in by sneezing and a watery discharge from the nose which, as the disease progresses, becomes mucopurulent, then purulent and, usually, finally becomes blood stained. The inflammation extends to the larynx and trachea and may develop bronchitis and bronchopneumonia. Cough is invariably present when the bronchi are involved and it may become very painful if bronchopneumonia ensues. The onset of pneumonia when it occurs is sudden.

About 60% of the cases of respiratory mixed infections are sequels of virus distemper; 40% occur independently.

The intestinal type of mixed infections is very common. It is characterized by gastritis and enteritis or gastroenteritis. The mortality is high, about 20 to 25%.

The temperature varies in gastroenteritis from 105°F. to subnormal. Emesis is usually present and leads to rapid dehydration. Diarrhea is persistent, the discharges being fluid, copious and foul-smelling. The animal suffers great pain from tenesmus.

Treatment should be directed to (1) counteract the infection, (2) support the animal and (3) provide nutrition.

Sulfathiazole, sulfadiazine and neoprontosil are useful in combatting the intestinal infection. Penicillin is remarkably effective in some cases, in other cases there is slight, if any, effect from the drug. Doctor Ruggles suggests the following method of administration:

1. Dissolve 100,000 units of penicillin in 8cc of distilled water.
2. Add 2cc of the penicillin solution to 10cc of a 50% solution of dextrose.
3. Give 2cc of the latter solution, intravenously, night and morning.

It will thus be seen that the animal receives a little more than 8000 units of penicillin daily.

Some veterinarians have reported satisfactory results from the administration of penicillin in peanut oil, intramuscularly, twice daily.

The dehydration must be combatted by injections of normal saline solution until the vomiting can be brought under control and then by allowing small quantities of water frequently. The saline solution may be injected intravenously, intraperitoneally or even subcutaneously. The subcutaneous route is probably most convenient.

An animal that is vomiting and has diarrhea and an elevated temperature is quickly depleted of its supply of the vitamin B complex and also of vitamins A and C. The vitamin deficiencies should be overcome by the administration of refined products since absorption from the intestinal canal is in abeyance. No treatment can be successful in a vitamin deficient dog. It is difficult to treat a dog successfully that is in a poor state of nutrition from any cause or one that is heavily parasitized.

Some cases become chronic and the symptoms are intermittent and much less severe. For such cases omadin and the injection of a foreign protein are useful. Kaolin+pectin is useful to relieve the diarrhea. If constipation ensues, following cessation of the diarrhea, the animal should be given an enema and a dose of milk of magnesia daily for three or four days.

There are many causes of these mixed infection diseases; all have to do with lowering the normal resistance of the dog to the organisms causing these infections; organisms

*Notes from an address by Dr. S. W. Haigler, St. Louis, Mo., at the 21st Annual Conference for Veterinarians, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, February 26, 27 and 28, 1946.

which are normally present in the respiratory and digestive systems of healthy dogs. Virus distemper of course leads the list of predisposing causes and is probably responsible for rather more than half of the attacks. Among the causes of the remainder are, poor nutrition, improper food, vitamin deficiency, exposure, etc.

The habit some dog owners have of letting their dogs live part of the time indoors and part outdoors seems to be the predisposing factor in many of these cases. If a dog is going to sleep in the house at all he should sleep in it all the time. If he is going to sleep outside some nights he should stay out all nights. The indoors a few nights and then outside for a while is bad for him.

It is not always easy to tell a dog's state of nutrition just by looking at him. I have in mind one kennel, the owner of which was something of a food faddist. He was feeding a large number of dogs on bread exclusively. The animals were sleek and fat, their coats smooth and their appearance good. But they reached a state, as might have been expected, where several of them would have an attack of fright disease at the drop of a hat—literally at the drop of a pan, a shouted command or loud barking. Then he reversed himself in the matter and fed an exclusive meat diet. Again the animals looked to be in excellent condition but after a few months it was noted every one of his dogs, that we treated, died. It made no difference how trivial or how grave the ailment appeared in the beginning, the end result was always a funeral. After these two experiences he was willing to listen to advice about feeding his dogs and his troubles of the sort ended.

An Increasing Source of Uninspected Meat

The frozen food industry has furnished many spectacular developments but none more spectacular than the rapid growth of the locker plant industry. In 1938 there were 1200 locker plants. Three years later there were 4000 and during the war 2000 more were added. Informed persons in the industry predict there will be 30,000 in operation in this country within five years.

The increase in the number of lockers per plant, also, has been constant. Two million families are now locker plant patrons and it is predicted 15 to 20 million families will be patrons in five years. It is estimated that lockers store an average of 700 pounds of food, consisting principally of meat, per year.

Heretofore most locker plants have served rural populations. Seventy-five per cent of them are in towns of less than 5000 population. Now plans are made to install small units in large apartment buildings in the cities. Locker plant chains have been organized recently. One of them plans to erect plants in connection with, or adjacent to, gas stations.

It was pointed out in this magazine early in the locker plant era that here was a new and important source of uninspected meat which indicated a trend toward a lower proportion of inspected meat in this country. Already 45% of the meat consumed by farm families in Iowa is processed in locker plants. In the beginning locker plants were, in the main, supply storehouses for farm slaughtered animals, but now most of them slaughter and package meats. Many manufacture sausage and a considerable number have a delivery service that supplies non-locker holders. Some clean and process fish; others kill and dress poultry. Some do quick freezing for home freezer units. Some operate meat curing departments and smokehouses. In short here is an important meat food industry of which health departments take no cognizance, and for which no official supervision to protect the health of consumers is planned.

An OPA raid on two Chicago locker plants a year ago revealed that both were well organized and flourishing black markets. A check up disclosed that 75% of the patrons of these locker plants were in illegal possession of meat. This does not increase confidence in the ethics of the industry or support a view that it does not need official supervision.

Unfilled Gaps in Food Hygiene

Shopping around for ways to augment the usefulness of the veterinary service and for redeploying veterinary officers returning to private life, brings to mind the over-used fable of the castaway crew craving a drink of water, unaware that their raft had drifted into a fresh water bay where they might drink and survive. A simile is the veterinary profession drifting in the practically untouched sea of food hygiene, for here is "an ocean *sans* bourne." The moral is that the situation is so critical that the agencies directly concerned are groping about in vain for means of removing unfit food from the markets. Turning to the July issue of *American Butter Review*, for example, one finds Wendell Vincent, a key man in the Food and Drug Administration telling the alarming story of the dirty butter and cheese on the market and of no workable plan of removing it.[1]

[1] Vincent, Wendel, Chief, Denver Station, Food and Drug Administration. Are you losing the good friends? *Am. Butter Rev.*, pp. 208-212. 1945.

Quoting a processor: "About the only progress we have made [in 40 years] as far as quality cream goes is perhaps that our factory knows more about how to make edible butter out of the same cream we got then." This article by Mr. Vincent is reminiscent of an editorial that appeared in these pages (V. M., March, 1936, page 98), "Filthy, Putrid, Moldy, Rancid and Decomposed." The title was taken from court findings in cases involving 50 or more creameries where cream was seized by the Food and Drug Administration.

Coming, as the present article does, from official sources, we quote the following from it to aid in the program for the betterment of the nation's food in the interest of the farmer, the dairy industry as a whole, the public health agencies, and veterinary medicine:

There has been little improvement in the quality of cream used in butter making in 40 years.

Far too many cheese plants are accepting dirty milk. There is something seriously wrong when filthy milk and cream are delivered daily to cheese factories and creameries.

The [Food and Drug Administration] dairy project involves a very long range change in the fundamentally bad industry practices originating on the farm where cream is permitted to become filthy and decomposed and continuing to the processor who will accept unfit cream and churn it under insanitary factory conditions.

Much thought has been devoted by some of the industry to the development of straining devices to remove visible evidence of filth—the insoluble residue of manure and other dirt commonly found in contaminated milk. The Administration has consistently held that the use of strainers is not a satisfactory substitute for sound, sanitary practices in the production and handling of milk and cream. It has urged, instead, that every effort be made to prevent the original filth contamination.

Federal court actions will bear this out to a degree that should prompt many farmers to adopt better milking and handling practices. Because warnings have been ineffective the Administration found it necessary to invoke injunction proceedings against three manufacturers of cheese, one of whom also manufactured other dairy products. The filthy character of the milk received and used by these factories was one of the prime reasons for granting injunctions. It seems the citizens of the states in which these factories operate will shortly be eating some dairy products which the federal judges consider unsuitable for consumption by the citizens of other states. (The injunctions apply only to interstate shipments.—Ed.)

There is unquestionably a large incidence of brucellosis and mastitis among the cattle of this country. When a farmer markets milk from such diseased animals, he is depending upon someone else to make his product safe and therefore fit to drink. Of course, the creamery does intend to pasteurize cream going into butter but there are a large number of cheese factories in the United States that are not yet pasteurizing milk employed in cheese manufacture. It is my conviction that numerous farmers are sending to market, milk they do not permit their own families to consume. The sale of diseased animals also should be stopped.

The author goes on with quiet dignity to emphasize that in the final analysis, the farmer is the loser by ignoring the sanitary merit of his products. He must have consumers for his products. But what seems the most damaging from the economic standpoint is the implication that public health officials and doctors are losing confidence in the health value of dairy products. The boosts farmers received through the wide publicity given to bovine tuberculosis eradication and the sense of security pasteurization has brought are waning in the public's mind. "Cleaned milk is not clean milk" more nearly indicates the prevailing line of thought and that thought will grow to the detriment of dairy farming first and manufacture and sale next. Consumers, the author stresses, are becoming extremely critical about the dairy products they purchase for the dinner table. Dairy products are losing the confidence of public health authorities, the foundation upon which the whole dairy industry rests. The author speaks from 30 years of experience in that special field, and while he pulls no punches, sympathetic consideration is given to those branches of the dairy industry which frankly agree that improvements in the complex task of cleaning up the milk supply have been too long postponed and are deemed necessary to put a fundamental industry on sound and permanent footing. Proof of that is the acceptance of this forceful article for publication by the *American Butter Review* which, in its devotion to the cause its name indicates, looks into the future with eyes on the farm and factory.

What is the remedy? As in the case of meat, too much of the milk business is local to leave all to federal regulation. The job is one for the local health and veterinary service to work out in collaboration with the F.D.A. and United States Public Health Service. The veterinary profession qualified and deployed as it is in every part of the country is the logical instrument to invoke, and the veterinarian, positioned as he is in the hearts of the dairy farmer, is the logical man to conduct the necessary educational program on common cleanliness, law obedience, sound business and good sanitation. Cleaning up the milk, butter and cheese supply is the job of the local veterinarian working either part time or full time with the local health authorities. As public health services are being established in more and more counties throughout the nation, veterinarians should at least keep in touch with their development and offer their services in improving at its source the food supply of the nation.

Diabetes Mellitus in Dogs

By RAYMOND RUSSO*
Auburndale, Mass.

DIABETES mellitus may be defined as a metabolic disorder in which the ability to oxidize carbohydrates is more or less completely lost due to faulty pancreatic activity, especially of the islets of Langerhans.[1]

History.—The islands of Langerhans of the pancreas, so called because of their insular appearance, were first described by Langerhans in 1869. These structures elaborate a clear, colorless aqueous extract known as the hormone, insulin. This hormone was named by Dr. Edward A. Shafer in 1916 even before its existence was factually proved. Studies in the field of diabetes probably had their origin in experiments conducted in 1889 by von Mering and Minkowski[2] who discovered that the removal of the pancreas from dogs produced a syndrome typical of diabetes in humans. The concept that a pancreatic hormone was instrumental in the regulation of carbohydrate metabolism was developed during experiments conducted by Forschbach[3] which revealed that following an anastomosis of the blood supply of two dogs and the subsequent removal of the pancreas of one of the animals, *neither* dog suffered diabetes. Apparently, sufficient hormone was produced by the pancreas of the dog from which the organ was not removed to accommodate the demands for the carbohydrate metabolism of both animals. The theory that a hormonal mechanism was in operation was substantiated by Knowlton and Starling[4] who demonstrated an increase in the consumption of glucose by a heart taken from a depancreatized animal, and perfused with blood from the same animal, when there was added to the blood an extract prepared from the pancreas. Then followed the classic work of Banting and Best[5] in the preparation of suitable extracts for the treatment of human diabetes.

Physiology.—Normally, the liver stores glycogen which is converted from sugar derived from the food as well as that synthesized from proteins and fats. The body cells are supplied with glycogen by the liver according to their needs. As a result, the blood sugar level remains fairly constant. Insulin enhances carbohydrate metabolism as it increases the storage of glycogen in the liver, promotes its utilization in the tissues and facilitates the conversion of glucose to glycogen. Therapeutically, it reduces the blood and urinary sugar to normal and causes diminution of acetone bodies in the urine. The effect of insulin is antagonistic to those of the hormones of the adrenal gland, thyroid, and pars intermedia of the pituitary.[6] Impairment in the utilization of carbohydrates is the characteristic defect in pancreatic diabetes. When the insulin level in the blood is abnormally low, there is produced a hyperglycemia with resulting glycosuria and polyuria.[7] The hyperglycemia and the normal permeability of the kidney to sugar combine to bring about the excretion of the excess glucose in the urine when the blood sugar level goes beyond the average of 0.1% (when the renal threshold is exceeded). There is an increased and imperfect breakdown of fat, so that large quantities of intermediate products of metabolism in the form of ketone bodies (acetone, diacetic acid, B-oxybutyric acid) are produced with a resultant acidosis, lipemia and ketonuria. The hyperglycemia with its attendant glycosuria and polyuria cause symptoms of increased urination, increased thirst, weakness and emaciation. The disturbed metabolism of fats and proteins combined with decreased glycogen formation and deposition leads to asthenia, emaciation and ultimately to diabetic coma due to acidosis and intoxication by acid intermediate products.

Anatomical Changes.—These may, in many cases, be absent. A common finding is a fatty infiltration of the liver. The pancreas may show, according to Hutyra, Marek, and Manninger, an inflammatory connective tissue proliferation, atrophy, calculi, etc. Other structures may show emaciation, and evidence of cachexia due to the chronicity of the disease.[8]

Symptoms. — Emaciation, notwithstanding normal or increased appetite, is one of the earliest signs of the disease. The animal displays a lethargy, dullness, listlessness and rapid fatigue. There is generally manifested a great thirst and polyuria. As Kirk[9] indicates, that latter symptom alone should lead one to suspect diabetes. An examination of the urine shows it to be pale in color, sweetish in odor, and increased in specific gravity (1040-1060). Sugar content determination reveals a constant hyperglycemia, the level of which, however, varies with the diet. Ingestion of carbohydrates favors an increase in the urine sugar level, whereas proteins tend to decrease it. Urine findings should be supported by an examination of the blood for its sugar content in the fasting animal. The usual finding in dogs is a blood sugar level of about 180mg per 100cc of blood. The breath may bear a sweet odor, and the feces may display a large

*Department of Pathology and Bacteriology, School of Veterinary Medicine, Middlesex University, Waltham, Mass.

amount of unsaponified fat. Ocular changes may be present including keratitis and cataract, and if the case is well advanced, blindness may be evidenced. Alopecia has been observed in some cases, as has necrosis of portions of the skin. As the condition progresses, emaciation becomes more pronounced and ultimately the typical diabetic coma characterized by loss of consciousness, collapse and deep breathing ensues. The coma may be preceded by convulsions. An extreme weakness sets in and death follows. The course of the disease is a long one extending in some cases to a couple of years.

Diagnosis.—The symptoms, and laboratory examination of blood and urine establish a diagnosis. Polyuria often indicates diabetes. (The condition under discussion differs from diabetes insipidus which is caused by pituitary dysfunction in that the latter disease manifests urine of low specific gravity and no excess of sugar; and, in addition, the feces are not rancid.) Positive diagnosis is dependent on a constant glycosuria supported by a finding of high sugar level in the blood.

Prognosis.—The outcome is highly unfavorable, because with the passage of time, secondary changes begin to complicate the condition.

Treatment.—In addition to medication, regulation of the diet is very desirable. It is advisable to limit the carbohydrates in the ration, decrease proteins and increase the fat content. Sodium bicarbonate should be administered daily to combat acidosis.

Insulin relieves the symptoms of hyperglycemia, glycosuria, ketonuria and acidosis since it tends to correct the errors in carbohydrate and fat metabolism. Insulin is ineffectual *per os*, but is effective when given subcutaneously or intravenously. A full and rapid effect is achieved with the latter route. Insulin causes a correction of the metabolic disturbances brought on by its deficiency. Its curative effect is manifested by a rapid fall in blood sugar and a deposition of glycogen in the liver thus indicating an improved utilization of carbohydrates. Hutyra and Marek suggest an initial dose in dogs of one unit of insulin per kilogram of live weight per day. However, the dosage should depend on the severity of the disease. High dosages (three to six units per kilogram of body weight per day in divided doses every two to three hours) combined with carbohydrates to guard against fatal hypoglycemia are required for conditions complicated by coma.

Case History.—A 6-year-old, male, chow dog was entered into the Bowen Animal Hospital in Framingham, Mass., with the complaint that the animal was losing weight and that its tail was completely hairless. A hairless patch was found too in the region of the withers. The owner believed that this was due to rubbing of the dog's harness. However, I discounted this since the area affected was too large. The dog looked and acted like a 15-year-old dog. Upon further examination, I became convinced that the dog was not suffering from isolated ailments as the owner suggested, but rather from some basic internal disorder. The hind legs appeared stiff when in motion and, while moving about, the dog struck a chair when turning around. Closer examination of the eyes revealed the development of cataracts in both eyes, and complete blindness in one of them. Questioning produced information of much diagnostic value.

The owner revealed that the animal manifested an abnormal thirst and excessive urination; that the appetite was good, yet loss of weight persisted; that the urine had appeared a deep orange in color recently. On the basis of the history and information obtained from examination of the animal, I informed the owner that the condition was probably a metabolic disorder, most likely diabetes.

I suggested hospitalization of the animal for observation. This the owner consented to. While in the hospital, the dog displayed a marked lethargy, being content to lie with its legs drawn under its body and its head resting on the floor of its kennel for long periods. It was felt that blood and urine examinations would be most helpful in arriving at a definite diagnosis.* The findings were as follows:

January 8, 1946

Urine: dark orange; slightly cloudy; specific gravity = 1.045; pH = 6.5; albumin—a trace; sugar ++++ (complete reduction); acetone +++; diacetic acid—a trace; bile ++; urobilinogen slightly increased.

Sediment—large amounts of calcium oxalate and uric acid crystals; bile salts; few epithelial cells.

Blood: could not be examined, because it was partly clotted.

Report: the dog has a severe diabetes mellitus. Blood sugar as well as a routine blood examination should be done.

January 9, 1946

Urine: again showed sugar ++++; acetone +++; there was no diacetic acid.

Blood: Hgb. 9.6 grams; R.B.C. 4, 380,000 cu. mm; W.B.C. 11,100 cu. mm; color index = 0.97; differential: Neutrophile polymorphs 75%; stab cells 4%; Lymphocytes 20%; Monocytes 1%. Red

*We are indebted to Rosa Kubin, Ph.D., 19 Appleton Street, Waltham 54, Mass., for her help in providing us with the complete blood and urine determinations given with the case history presented.

blood cells and platelets appear normal.

January 10, 1946

Blood sugar determination = 382mg% (normal—80-100mg%).

The blood and urine examinations combined with history and other findings substantiated the tentative diagnosis of diabetes; and clearly indicated that the condition was that of diabetes mellitus.

It was hoped that we would be permitted to utilize insulin therapy in an effort to overcome or at least improve the dog's condition. Unfortunately, the owner desired euthanasia and would not permit a post-mortem examination.

It is the opinion of the writer that diabetes in dogs is not as rare as it is generally believed. The condition is probably not diagnosed sufficiently because the veterinary profession has not given blood and urine examinations the attention and use they deserve.

Bibliography

1. The American Illustrated Medical Dictionary—Dorland. 1944.
2. *Arch. Exp. Path. Pharm.*, 26, p. 371. 1890.
3. *Arch. Exp. Path. Pharm.*, 60, p. 131. 1909.
4. *J. Physiology*, 45, p. 146. 1912.
5. *Amer. J. Physiology*, 59, p. 479. 1922.
6. Pathology and Therapeutics of the Diseases of Domestic Animals—Hutyra, Marek and Manninger. 1938.
7. Introduction to Physiological Chemistry—Bodansky.
8. A Text Book of the Diseases of the Small Domestic Animals—O. V. Brumley. 1943.
9. Index of Diagnosis for the Canine and Feline Surgeon—H. Kirk. 1944.

Improve Our Veterinary Conferences

The American Veterinarian of today has reached his present high efficiency in the profession through the proficiency of our veterinary schools and our veterinary associations.

All ethical veterinarians appreciate the importance and value of assembling in association meetings. These conferences are for the purpose of exchanging ideas and gaining knowledge of better methods and technic in our daily professional activities. Those charged with the duties of arranging programs for such meetings carry a heavy responsibility in selecting lecturers, speakers and equipment to meet the demand of a scientific and professional audience.

In making these selections men and women well known for their outstanding scientific and professional achievements are sought. Their messages are of great value to the profession and aid in safeguarding our livestock industry in health and conserving it in disease. This part of the program is the magnet that attracts the veterinarian; he comes to the meeting to gain knowledge and ask questions on the difficult problems he encounters in his daily professional activities.

The lecturers and speakers also carry a heavy responsibility for properly presenting the subject assigned in order that what is said may be of greatest value and usefulness. Speakers chosen to appear on veterinary programs of course are qualified for the job, however, they should realize at all times that they are speaking to a professional audience, and that the audience should not be overdosed with long manuscripts containing much extraneous matter.

There is an art in public speaking whether it be extemporaneous or by manuscript. Speakers on scientific subjects should have the ability to sense this valuable asset in presenting their subjects.

In this modern age, there is available much and varied equipment for illustrating subjects in great detail and color. The speaker should make use of this valuable asset whenever possible in presenting his subject. He is well advised to prepare his subject in synoptic form and have the full details in manuscript for distribution to the audience. This plan gives an ample opportunity for a question period by those interested in the subject. If he will present his subject in charts as well, the impression he makes will be doubly deep and doubly lasting.

Public speakers on scientific veterinary medical subjects deal with both facts and opinions. They should speak with great interest and enthusiasm, and loud enough so that every word may be heard. Oratory has no place in speaking on scientific subjects; neither has mumbling in one's beard. If a thing is worth telling, tell it well. Tell it forcefully. Put punch behind it.

When veterinary medical subjects are to be presented to our association meetings and our college conferences, clearness of expression, force and earnestness are the qualities that impart knowledge. These attributes must exist in the speaker, in the subject, and in the occasion.

E. M. NIGHBERT

Cantonment, Fla.

Effect of Temperature on Shock

In experiments in which dogs were bled to a point at which their lives were delicately balanced, when the animals were placed in controlled temperature of 95° F. the mortality was highest but at 72° F. it was lowest. The mortality at 85° F. was more than double that at 72° F., while at 52° F. there were more deaths than at 72° F.

A Veterinarian's Experience in the Philippines Before and During the Jap Occupation

By STANTON YOUNGBERG
Palo Alto, California

MY FATHER, John Albert Youngberg, a graduate of the Chicago Veterinary College, conducted a general practice in Lake Park, Minn. I was born there and graduated from the College of Veterinary Medicine, Ohio State University in June, 1907. Before graduation I had taken and passed a civil service examination for Veterinarian, Philippine Service and upon graduation was given an appointment to that service. With my classmate, James R. Love, I sailed from Seattle July 26, 1907, and arrived at Manila August 26th. George E. Nesom, D.V.M., Iowa State, was Director of the Philippine Bureau of Agriculture at that time; Dr. David Moberly, K.C.V.C., was Acting Chief Veterinarian and Dr. Frank C. Gearhart* ISC '07, who had preceded me to the Islands by a few weeks, was Veterinarian of the City and Port of Manila.

At the time of our arrival, the veterinary personnel of the Bureau of Agriculture consisted of only seven men, and rinderpest and surra were rampant everywhere. Doctor Love and I were allowed to remain in Manila five days to get some hasty instructions on the animal diseases prevalent in the Philippines and then were shot out to the provinces to sink or swim. Love went to Cagayan de Misamis on Mindanao and I went to Batangas to report to Dr. C. R. Dilts, OSU '04, who, having been in the Islands for three years, was considered a man of great experience. Later on we were joined by Dr. J. A. Thompson, KCVC '07. When the worst of the epizootic had passed Drs. Dilts and Thompson were transferred elsewhere, and, having now had two months' experience, I was left alone to do the best I could. After another two months, I was sent to take charge of Romblon province and Batangas was left without a veterinarian. And so it went for another two years, due to the shortage of veterinarians, we stayed but two to four months in a province until the height of the epizootic passed.

We injected all the cattle and carabao that we could round up in the infected villages with antirinderpest serum and tried to enforce quarantines with the aid of not very enthusiastic local police forces. It is questionable just how much we accomplished, when we consider that the quarantines left much to be desired and the immunizing effect of antirinderpest serum alone was quite transient. In some places the Filipinos themselves were rather skeptical. I still remember, vividly, an animal burying ground in a certain town in Cagayan province. The owners of the dead animals had fashioned rude crosses over the graves, which by the way were quite numerous, and on these crosses they had placed placards written in Spanish or the native dialect which announced that the animals in question had been "inoculated two times," "Inoculated three times" or even "Inoculated four times" as the case might be.

In 1910, Dr. Archibald R. Ward, COR '00, arrived to take up his duties as Chief Veterinarian. Our veterinary force, also, was considerably augmented and I was appointed Supervising Veterinarian for the Island of Luzon. In my district I began to place increasing emphasis on the enforcement of quarantines and accompanying sanitary measures. I limited the use of serum to those places where the conditions were such that I felt that it had at least a 50-50 chance.

Drs. Ward, W. H. Boynton and F. W. Wood carried on a series of experiments at the reorganized Veterinary Research Laboratory, which substantiated the contention of those of us who had maintained that, in the field, serum alone could be used profitably only under certain controlled conditions. It became increasingly evident that to cope with Philippine conditions a search should be made for a more effective prophylactic agent.

Dr. A. R. Ward returned to the United States in 1913 and I succeeded him as Chief Veterinarian. Dr. W. H. Boynton was appointed Chief of our Research Division and intensive research was begun to develop a rinderpest vaccine. It was a long and oftentimes heartbreaking search, but eventually ended in success. The vaccine evolved became our most potent weapon in the eradication of rinderpest from the Philippines. To this day, the older veterinarians in the Islands refer to it as the "Boynton vaccine." Two loyal and diligent workers associated with Doctor Boynton were Drs. Ildefonso Patdu and Teodulo Topacio, graduates of the College of Veterinary Medicine of the University of the Philippines. Both have since passed to their eternal reward.

In the middle '20's, General R. A. Kelser, who was then a member of the Tropical Research Board of the United States Army gave us splendid assistance in perfecting the use of

*Doctor Gearhart and his brother, Dr. Ralph Gearhart, CVC, '07 or '08, were murdered soon after the Jap occupation of Misamis Oriental, where they operated a large cattle ranch.

chloroform as a preservative for the vaccine and in bringing about other refinements.

Doctor Boynton returned to the United States in 1924 to accept a tempting offer from the University of California. He was succeeded by Dr. E. A. Rodier, WASH '20. Under his direction further refinements in the vaccine were

Dr. Wm. H. Boynton developed a successful rinderfest vaccine after long and heartbreaking research

made. This making it possible to produce the vaccine in far greater quantities and at a greatly reduced cost.

Dr. Rodier went to China in 1933 to take charge of all the veterinary activities for the province of Kwangsi. During the short period of four years he did a brilliant piece of work there, which was, unfortunately, brought to an untimely end by the Japanese invasion of China in 1937.

In 1925, Governor General Leonard Wood appointed me Director of the Bureau of Agriculture. Five years later, the Bureau of Agriculture was divided into the Bureau of Animal Industry and the Bureau of Plant Industry and I became Director of the Bureau of Animal Industry, which position I held for three years. In 1933, I was appointed Advisor on Agriculture on the staff of the Governor General. In 1934, The Congress of the United States passed an act creating a Commonwealth of the Philippines. With rinderpest no longer a menace to the Philippine economy, I felt that my work had been accomplished and that younger men should carry on under the new set-up. Mrs. Youngberg and I then returned to the U. S. and went to live on our farm near Columbus, Ohio, after a residence of 26 years in the Philippines.

In March, 1939, I was called out of retirement because of Hitler's rampage in Europe. The Refugee Economic Corporation of New York requested me to go to the Philippines to ascertain the feasibility of accepting the offer of the Commonwealth Government to receive 10,000 Jewish refugees from Central Europe for settlement in agricultural colonies. Mrs. Youngberg and I arrived in Manila Dec. 28, 1939, after an absence of just over five years. I was still engaged on this refugee work when the Japanese swept in like lightning and quickly placed us in what they were pleased to call, "protective custody."

In view of what has happened since one may well wonder why we returned to the Far East, late in 1939 after the outbreak of the war in Europe. My answer to that question is that

Gen. R. A. Kelser gave us splendid assistance in refining the vaccine

the "phony war" fooled me as badly as it did the "brass-hats" of England and France and those leaders of our own country who vociferously promised victory for the Allies without our becoming involved in a "shooting war." The events that transpired in the spring and summer of 1940 certainly disillusioned many people and particularly those of us residing in the Orient.

When France collapsed and Japan demanded that England close the Burma Road, many of us thought that the Japanese would start to move at any time. But England is an experienced and realistic nation and she complied with the Japanese demand in order, no doubt, to gain time. The British authorities in Hong Kong then proceeded immediately to evacuate women and children and nonessential males. These evacuees were first brought to Manila and later distributed from there to Australia and other British possessions. This quick action clearly showed the realism of the British and was an event that should have been carefully noted by our own authorities.

When later, after considerable pressure from the United States government, the British re-

opened the Burma Road, many of us thought that Japan would strike against the British colonies in the Far East very quickly. Her failure to do so at that time was very likely due to her fear of Russia, then still on friendly terms with Hitler. Anyway, we breathed a little easier for a time.

However, at the end of 1940 and beginning of 1941 the U. S. Army and Navy ordered the evacuation of the families of their personnel in the Islands to the United States, and we began to wonder how soon a similar order would come for the American civilians. A few weeks later the State Department advised all Americans to get out of Japan, China and French Indo-China; but not a word was said as to those resident in the Philippines. Then to confound confusion the Americans who were warned to leave Japan, China, etc., were permitted to come to the Philippine Islands. It just didn't make sense!

Those of us who had lived in the Philippines for some years and were well acquainted with the whole defense set-up were of the opinion that the Islands could be invaded successfully. As the tension in the Far East increased the Americans in Manila met and organized the American Coördinating Committee to devise ways and means for the protection of our civilian nationals. A prominent Manila business man, and an old friend of mine, Mr. F. J. Stevens was chosen chairman of this committee.

At the time the Americans of Manila took this action, I was in the island of Mindanao on business. On my return to the city, Mr. Stevens asked me to serve on the "Evacuation Committee." On my first meeting with that committee, I was surprised to find that in the event of trouble they were considering the evacuation of American women and children in small groups to various provincial towns. In some manner that I could not fathom, the committee had convinced itself that an enemy attack on the Islands would be confined to heavy bombing attacks on Manila and the other important ports and thus neutralize the Islands without the necessity of an invasion in force. After a great deal of discussion, I convinced the other members of the committee that, if Japan should attack, she would most certainly attempt to occupy the country as rapidly as possible and it would, therefore, be very inadvisable to have white women and children scattered in small groups in provincial towns. In the event of an invasion the safest place, after all, would be Manila which would be the headquarters of the High Command. Evacuation was greatly to be desired, but that evacuation should be to the United States.

The whole subject was gone over carefully with Mr. Stevens. He was convinced that some official expression should be forthcoming so that women and children could be persuaded to return to the United States while there was still time. Mr. Stevens informed me that he tried on several occasions to get an expression from the U. S. High Commissioner, but without success. The only statement on the subject was obtained by me from Mr. Claude A. Buss, Executive Assistant to the High Commissioner. This was at a meeting of Americans which he addressed in the Ellinwood Seminary. At the meeting there was "much ado about nothing" as to what should be done in case Manila were bombed. At the conclusion of his talk I asked Mr. Buss if the High Commissioner's office would not unofficially pass out a sub-rosa suggestion to Mr. Stevens that it might be the part of wisdom to induce as many women and children as possible to return to the U. S. His reply seared itself indelibly into my mind. These were his words: "Why, Doctor Youngberg, the High Commissioner's office will never suggest to anyone that he leave the protection of the American flag." That made it quite evident that the highest American authority in the Philippines was fully in tune with that mysterious hush-hush policy, that in the end proved so fatal.

Only a few Americans left for the U. S. Up to the very end Washington was still giving passports to those who wanted to return to the Islands. Some good friends of mine arrived in Manila from the U. S. on December 4, 1941. And so the Americans in the Islands continued to live in a fool's paradise from which they were rudely brought back to a tough old world on December 8 (Manila time) when the Japanese bombs rained upon them. The rest of that story everyone knows. The Japanese made good their invasion in three short weeks, for the retreat into Bataan was in itself a confession of defeat. With inadequate defenses we had bluffed and our bluff had been called.

Just after sundown on January 2, 1942, Mrs. Youngberg and I stood in the window of our apartment and watched a column of swaggering Japanese soldiers come marching down Calle Dakota, turn west two blocks and hoist the flag of the Rising Sun over Military Plaza and occupy what had formerly been the residences of the United States Commanding General and his staff. We looked at each other without trusting ourselves to speak for we knew that we were witnessing the end of an era. We were confident that in the end the might of American arms would triumph and that the Islands would again be free. But, we

also knew that, by suffering such a swift and stunning defeat, the white man had definitely "lost face" and that in the future Asia would determine her own destiny whether the white man might like it or not.

The afternoon of January 4, 1942, representatives of the Japanese army confiscated my car and 24 hours later they came around and hustled Mrs. Youngberg and me off to Santo Tomas, which was then quite a bit of a madhouse. The Japanese were anxious to get all enemy nationals under lock and key as soon as possible; but they had made no arrangements to care for us. We were all told to take along a three day's supply of food, but, of course, most of us took more; and it was fortunate that we did, for it was a long time before the Japanese did anything about feeding the internees.

At daylight on January 12th I suffered a severe heart attack and was taken to a temporary hospital which the interned physicians were fixing up without much with which to work. The next day the Commandant of Santo Tomas permitted me to be removed to St. Luke's Hospital in Manila. I remained there 5½ months, at the end of which time I was in condition to leave the hospital but not strong enough to stand the life in the internment camp. After several examinations by Japanese doctors I was permitted to be interned in my apartment and Mrs. Youngberg was allowed to leave the camp to take care of me. We were given passes which had to be taken to Santo Tomas each month for renewal. From time to time, Japanese army doctors came around to check on the state of my heart to determine whether I could be taken back to camp. I was, also, visited by members of the secret police (Kempetai) for questioning regarding my work for the Jewish refugees. They grilled me very fully. In fairness, I must state that at no time did the Japanese doctors or the police assume a violent or threatening attitude toward me. On my part, I was very careful to give them no excuse for so doing.

Whenever Mrs. Youngberg went out to make her purchases of food and medicines, she had to wear a distinctive red arm-band with Japanese characters which identified her as an American. She, also, had to carry her pass with her at all times and be prepared to present it for inspection on demand. During the three years that we remained outside of Santo Tomas she was molested only once and that was in December, 1944, at which time matters were becoming very tense. She was sitting in a little Filipino *zapateria,* waiting while the cobbler repaired the heels of her very much worn shoes. Suddenly a burly Japanese marine appeared in the doorway and demanded to know if she were an American. She pointed to her arm-band and said yes. Whereupon he doubled up his fist and gave her a resounding blow on the side of the head and then left the shop without another word. After that Mrs. Youngberg went out very rarely and some friends of ours shopped for us clandestinely.

We were not supposed to have any visitors, but many of my old Filipino friends would manage to slip around to see me and bring the good news when there was any. Early in 1942 all radios were ordered in for reconditioning and were so fixed that they could pick up only the local Japanese propaganda station. However, some did not have their radios reconditioned and operated their short-wave sets, though the Japanese had made it a death penalty to do so. From time to time some of those who had such sets would be reported to the military police. They would be yanked off to the torture chambers in Fort Santiago immediately and many of them were executed there. Some old friends who lived across the street were caught the third week in January, 1945. We saw them roped together and marched away to what we felt sure was certain death. They were never seen again and their remains were never found. They were three men and four women, one the mother of four children. The children were not executed.

Just before the outbreak of the war I weighed 190 pounds; upon being liberated I weighed 105 pounds and was in a correspondingly precarious physical condition. During the year 1942, food was not too hard to get, but after the middle of 1943 the situation went from bad to worse. Such things as meat, chicken and eggs became increasingly scarce and, combined with rapid depreciation of the currency from month to month, were finally out of reach of everyone except the collaborators who seemed to have the money. So our diet finally got down to a little rice or corn meal, *camotes* (a variety of sweet-potato), some mung beans once in a while and different kinds of coarse, watery greens that contained very little nutriment. Once in a while we managed to get some carabao (water buffalo) milk. That was my salvation. If it had not been for this very nutritious milk I feel pretty certain that I would not have been able to pull through. Mrs. Youngberg lost 40 pounds, which she could ill afford as she is a small woman, but kept going on her nerve. Had I been confined in Santo Tomas with my heart condition and without any chance of getting even the little extra food that we were able to get outside, I know that I would have been among those who were laid to rest in the little cemetery inside the walls.

Up to February, 1944, the people in Santo Tomas were allowed to purchase extra food which was sold inside by Japanese vendors. Relatives and friends on the outside were also allowed to send in food on certain days. But in that month, the Japanese clamped down on everything with a vengeance. The only food the internees got was what the Japanese permitted to be served. The number of calories per person per day fell from 1452 in February, 1944, to 898 in December. Meat, milk and eggs were totally absent. Up to September a gross daily average of one ounce of fresh fish per person was provided; also an average of two small bananas per person per month, and no citrus fruit at all. It was a deliberate campaign of starvation for the Japanese in Manila, both military and civilian, were well fed to the very end. I know that from my observation of a detachment of Japanese marines that was quartered only a few doors from our house. Up to August, 1944, the male internees lost an average of 27 pounds per person and the women 16 pounds. From August till the end of the year the loss was an additional 24 and 16 pounds, respectively. From January, 1942, to Jan. 31, 1944, 25 months, there was a total of 185 deaths in Santo Tomas. In the next eight months to Sept. 30, 1944, there were 54 and in the three months to Dec. 31st there were 43. In January, 1945, the deaths totaled 32; they were really starting to die fast by that time. Had our forces been delayed another two or three months, Santo Tomas would have been a shambles. As a matter of fact there were many who were so far gone that they could not survive even with the good food and hospitalization given them by our army after recapture of the city.

Among those who passed on was my old friend and co-worker Dr. David C. Kretzer, who died in December, 1944. He was a graduate of Keokuk Medical College, Western Veterinary College and McKillip's Veterinary College. He was a fine veterinarian, a true and loyal friend and one of nature's gentlemen. We had been close friends for 35 years and it grieves me to know that his life was cut short as a result of the treatment he received in Santo Tomas.

MacArthur's men liberated Santo Tomas on the evening of February 3rd, but that did not help me much as I was living south of the Pasig river, where the fiercest fighting in the battle of Manila took place. We were between the battle lines for 12 days. On the 10th of February the Japs set fire to that part of the district of Malate where we lived and we had to flee from our burning apartment to seek refuge under a concrete bungalow across the street, which for some inexplicable reason, the Japs did not dynamite. We were crowded under that building for five terrible days and nights with about 200 other persons of all nationalities who had also fled there for safety. Many of them crept in wounded and bleeding after having been shot at and bayoneted by the blood-crazed Japs, while running from their burning homes. It was a ghastly sight! Each day the battle raged more fiercely, with shells exploding all around; one that fell near us killed one of my Spanish friends and two Filipino friends. We did not expect to live through it and I still consider it miraculous that we did. I still wake up at night and wonder whether it was all a bad dream.

The battle around us reached its crescendo on Feb. 15th and then about 4 p.m. there was quiet, with the exception of occasional rifle shots and bursts of machine-gun fire. About five o'clock one of the Filipinos in our group ventured out and soon returned to report that the spearhead of the American advance had reached the corner of Tennessee and Dakota, only half a block away. It was the good old 37th (Ohio) division. Needless to say we got over to their lines as quickly as we could even though we had lost everything we had and all of that part of Manila lay in ruins around us. We spent the night at a four-man post, only three blocks from where we had been rescued. It was getting dark and there were snipers around, so we were not allowed to go any further. The next day an American officer came along with a truck in which Mrs. Youngberg was taken to Santo Tomas while I was taken to the 226th Station Hospital for treatment and nursing.

On April 9th I was placed in the hospital of the U. S. Army Transport Torrens enroute to San Francisco, where we did not arrive until May 15 because of a circuitous route via Palau, Admiralty Islands and the New Hebrides. On arrival I was taken, in an ambulance, to the Stanford-Lane Hospital for further treatment, and remained there until my release on September 10th.

It is interesting to sit detached and watch the reaction of the American people now that the war is over. I sincerely hope they will not again delude themselves into the belief that this is the last war this world is going to see; if they do, and forget to be prepared the course of events the next time may lead to defeat and to our extinction as a nation. We came very close to it this time! Let us hope that the coming generation will be wise enough to learn from the terrible mistakes made by our generation. The next 50 years will prove whether we have the greatness to live up to our responsibilities.

Bovine Cesarean Section at Sea

By E. R. QUORTRUP[1] and S. S. FRIEDMAN[2]
Bowie, Maryland

CESAREAN section is considered routine by practicing veterinarians all over the country, and it has been described adequately in the literature, but the circumstances under which this operation was performed may perhaps justify the present paper and be of interest to the profession.

March 3, 1946, we left Newport News, Virginia, on board the S/S Woodstock Victory with a cargo of 761 cows and 89 horses from UNRRA destined for Danzig, Poland. During the voyage 64 calves were born and in about 20 of these obstetrical aid was required in delivery. There was a large percentage of retained placentas, probably caused by the strange environment at sea.

March 7, when we were a little west of the Azores, a case of dystocia came to our attention. It was a small Ayrshire heifer with a very large fetus. The cow had been in labor for a couple of hours when we decided to make a vaginal examination to determine what was wrong. It was found that the fetus was in dorso-lumbar, breech presentation with its hocks bent.

The fetus was repelled manually and the legs straightened out with some difficulty, and it was then thought that the rest would be easy, but this did not prove to be the case. Obstetrical chains were placed on the legs and the proper traction exerted, but the fetus would not yield.

Repelling instruments were not at hand and the exact position of the anterior part of the fetus could not be determined. In our minds there were, therefore, only two things to do: euthanasia or cesarean section. It was decided to try the operation in spite of the rolling of the ship, very poor lightning, and a meager supply of instruments and other surgical supplies.

The cow was located below deck in hatch No. 4, and the time at which preparations were started for the operation was approximately 8:00 p. m. The electric globes in the overhead appeared to give off as much light as oversized glow-worms, but sufficed to give one a general idea as to where the patient was located. Two men were appointed to direct flashlight beams to the operative site. We soon had a gallery of some 20 seamen, cattlemen and ship's officers, many of whom assisted willingly and efficiently with the operation as directed. We carried no chloral hydrate for intravenous use so epidural anesthesia was decided upon. The cow was cross-tied to two beams, surgical supplies were arranged on bales of hay, and the operative site was shaved and disinfected by the junior author while the senior author sneaked away to his cabin to go hurriedly over Frank's "Veterinary Surgery Notes" pertaining to the operation at hand. This admission is made in view of the fact that the senior author has spent his entire professional career in research and does not wish to pose as a surgeon.

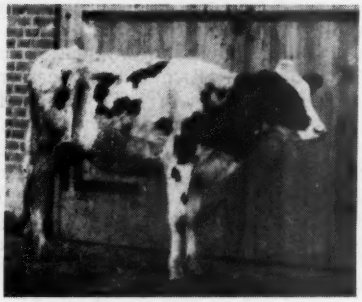
Following preliminary preparations, the cow was given 40cc of a 2% solution of procaine epidurally. It was necessary toward the end of the operation to give an additional 20cc. The skin and underlying muscles were infiltrated with procaine in the prepared line of incision. The effects of the epidural anesthesia caused the patient to go down, as desired, and she was placed in lateral recumbency on the left side. Towels dipped in alcohol were fastened with skin clamps around the operative area in the flank, which was painted with tincture of metaphen. Instruments were submerged in isopropyl alcohol for 15 minutes and then spread out on a towel, also dipped in alcohol, for ready use.

The good ship Woodstock Victory and the chute in which livestock were hoisted aboard

A skin incision about 16 inches long was made in the flank area, after which the muscular layers were separated with scalpel and scissors. The moderate bleeding which occurred was controlled with hemostats; no tying-off being necessary. The peritoneum was punctured and the opening enlarged to the proper size with a blunt bistoury. The omentum with its rich blood supply was then

[1] From the U. S. Fish and Wildlife Service (Temporarily Consultant Veterinarian for UNRRA).
[2] Consultant Veterinarian for UNRRA.

exposed and it was necessary to grasp this with rubber gloved hands and push it forward to bring the uterine horn in view. In this operation an armful of guts protruded, and it was with some difficulty that these were pushed back and the pregnant horn was brought out so that it completely filled the opening. An incision was then made through



Our patient (cesarean) safely delivered in Poland

the uterine wall, care being taken to avoid the cotyledons. The fetus, which appeared to have been dead for about 24 hours, was pulled out and the entire placenta removed. The position of the fetus within the uterus was examined, and it was seen that the head and neck were twisted and turned downward and the legs bent in such a manner that they were pressing against the pelvis so that normal delivery was impossible. A liberal dusting of sulfathiazole powder was applied, and the uterine wall was closed with a continuous suture of chromic catgut No. 2 superimposed by a series of interrupted Lembert sutures of the same material. The peritoneum and the muscular layers were closed with interrupted

The Senior Author attends one of his equine patients, enroute to Poland

sutures of umbilical tape, after which the skin was closed with interrupted nigrosute and covered with a liberal layer of 5% sulfathiazole ointment. We had no glucose or saline solution on hand so the patient was given 150cc of hemorrhagic septicemia antiserum intravenously. The operation was completed about midnight, and the authors retired without taking sleeping pills after a rather long working day which had started with a deliv-

American livestock is now pouring into a country which has been treated like this, to alleviate the acute food shortage

erable dystocia case the preceding morning at 2:00 a. m.

The patient was examined early the next morning, at which time she got up, went over to a bale of hay, and started eating. She was led to her stall and food withheld for twenty-four hours. She was fed only hay for the first few days, after which grain was added in small but daily increasing amounts.

The temperature remained 103° F. for a few days, and she was given 500,000 units of penicillin in wax and oil daily for three days. It is believed that this medication saved the cow's life as the operation was performed under anything but aseptic conditions.

March 17, we docked in Poland, and on the 19th the cow was unloaded and turned over to the Polish veterinarians, Drs. Budzynsky and Kuraszkiewicz, who promised to take good care of our patient. March 21, when we left port, we were told by these men that the cow was in excellent health.

The Poles appeared well pleased with all the cargoes of cattle and horses provided by UNRRA, and after seeing some of the havoc wrought in this war-torn country we fully realized the necessity of such supplies donated by the American people. We were happy to return to a mighty good country.

Dairy Cattle Practice*

IN Iowa diseases of dairy cattle are important because of the number of cows and calves that are lost from disease, the interference with reproduction and even more because of the lowered production of the affected animals. From what I can learn of conditions elsewhere, the situation is about the same wherever dairying constitutes an important branch of farming.

Parturient Paresis

Parturient paresis is one of the most important diseases of dairy cattle because of its prevalence among high producing cows. There have been, and still are, many theories as to its cause — auto-intoxication, anaphylaxis, cerebral anemia and calcium imbalance among them. Since the intravenous injection of calcium usually relieves the condition many veterinarians favor the calcium imbalance theory of the cause. My own belief is that the cause is unknown. I have demonstrated to my own satisfaction that feeding calcium will not prevent it, hence my skepticism of the theory of calcium deficiency.

Two types of parturient paresis occur—the nervous and the somnolent or paralytic. The former is very much in the minority in our practice and I sometimes wonder if those who report a considerable percentage of nervous cases may not include cases of acetonemia.

More than one-half of our cases of milk fever occur within the first 18 hours after calving and about one fourth occur between 18 and 24 hours after parturition. Only 5% occur more than 48 hours post-parturient. The ailment is most likely to occur at the peak of production—third to fifth calving. I did not see a case in a first-calf heifer in the first 20 years of practice, but I have had two such cases in the last five years.

Acetonemia frequently occurs in association with milk fever. I doubt though that there is a causal relation between the two diseases. Mechanical pneumonia, however, is a true complication of parturient paresis. It is serious enough, and occurs often enough, to justify taking every precaution to prevent it. When a client reports a case of milk fever to us, we always direct him to keep the cow up on her sternum, by bracing if necessary till we arrive. It is when a cow is lying flat that she aspirates saliva and regurgitated material. In time, one's clients learn to brace the cases upon the sternum with bales of hay or sacks of straw, when the animal first goes down. Animals so handled don't die of pneumonia a few days after we have treated the original ailment successfully.

Of course on the first visit to a parturient case we give calcium gluconate intravenously and if it is a simple, uncomplicated case that is all we do, and all that it is necessary to do in a large majority of such cases. However, not all cases let us off so easily. If the animal is not up in five hours the treatment is repeated and then we are content to wait another 24 hours. If the cow is still down 24 hours after the second treatment we give her a third injection of calcium gluconate and add an injection of dextrose intravenously and then do everything possible to get her on her feet. We try the electric prod, the barking dog, dragging a cat backwards from withers to tail head, throwing a squawking hen in her face, dashing a bucket of cold water in her face, etc. Many of these long-time-down cases don't get up simply and only because they just don't want to. One can't tell what strategem will change their minds, so it is well to keep trying as long as there is hope of success. Some will get up if helped but won't remain standing. A rope sling works well in some cases. Don't use a broad band under the belly to sustain their weight. It's too uncomfortable. It is no use to get panicky about these cases that won't get up. I've seen them stay down up to eight days and then get up of their own accord and eventually give a good flow of milk.

The aftercare of cases of parturient paresis is just about as important at the treatment. Skip the first milking after the cow gets up. Then milk just enough to relieve the tension in her udder, every five hours for a couple of days and don't strip her for four days. It is difficult to induce an inexperienced dairyman not to milk his cow "clean" when she appears perfectly normal, i. e. it is difficult until he loses one by doing just that. Some apparently recovered cases of milk fever will die overnight if stripped within 24 hours after recovery. A greater number will suffer a relapse which may be more serious than the original attack. It won't interfere with milk production later, to hold back on the milking for a few days and it won't cause mastitis. Some cows have mastitis together with milk fever, just as many develop mastitis with no history of milk fever. When the two diseases are associated both must be treated, and this

*Notes from an address on Dairy Cattle Practice, by Dr. J. C. Carey, West Liberty, Iowa, at the 21st Annual Conference for Veterinarians, The School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, February 26, 27 and 28, 1946.

calls for withdrawing all milk from at least the affected quarter or quarters.

Acetonemia

Acetonemia is not common in my district but we see a number of cases every year. It may occur at any time but is more prevalent between the 24th and 96th hour after calving than in any other period of equal length. Cases occurring at this time are often associated with milk fever. Both ailments require independent treatment.

Like parturient paresis I think the cause of acetonemia is unknown. Perhaps there is more than one cause. It may be that acetonemia is not a single disease entity but, like influenza or enteritis, a group of ailments. Because of this uncertainty we use a complex treatment: One-hundred-fifty-thousand units of thiamin daily for three days, dextrose intravenously and one ounce of chloral hydrate (given in a capsule). We dissolve two ounces of chloral in a pint of water and instruct the owner to give two ounces of the solution every four hours till he has given all of it. He is also directed to give a pint of karo syrup thinned with water as a drench daily for four or five days or if he is not handy at drenching, we have him mix two ounces of dextrose with each feed for an equal period. The uncomplicated cases of acetonemia all recover from this treatment. Of course if it is associated with milk fever, retained placenta, impaction or other ailment, as it commonly is, the other ailment also must receive appropriate treatment.

Retained Placentae

Retained placenta is a serious problem in Iowa in the winter. We don't see much of it when the cattle are on pasture. There are two types of retained placenta—(1) the thick heavy placenta and (2) the thin membranous slimy placenta. The thick heavy placenta that the cow fails to expel gives little trouble. We leave it alone for 48 to 72 hours and at that time it usually detaches from the uterine caruncles readily and is removed without difficulty. In the case of first-calf heifers we don't wait so long, but examine them 36 hours after calving, at which time the placenta may be removed or, if detaching it causes hemorrhage, we wait another 24 hours.

The thin slimy type of placenta is more difficult to remove. If at the end of 48 to 72 hours attempts to remove it causes straining and distress we desist at once and insert a couple of capsules of charcoal in the uterus, opening them and smearing the powder around with the hand. Recently we have been using urea and sulfanilamide powder instead of charcoal, but have had insufficient experience with it to say whether or not this treatment is preferable to charcoal.

Following this, the case is visited every day until all of the retained membrane is removed. At each trip we remove what placenta we can without inducing hemorrhage or too much straining and leave a portion of the membrane hanging through the os. Otherwise, in some of these cases, the cervix will close and give a lot of trouble.

Stilbestrol has not helped in handling cases of retained placenta. If I am present at the calving, as in cases of dystocia, and the placenta doesn't come away at once, I give the cow a hypodermic injection of pituitary extract. That is very beneficial if it can be given at parturition. I think it is always indicated in twin pregnancies. It promotes involution of the uterus.

Cows that have retained the placenta and had it removed on the second or third day should be watched on the seventh or eighth day. I instruct the owner that if the cow develops a foul discharge, a diminished appetite and the flow of milk is reduced to call me. In such cases I almost always find the uterus ballooned with fluid. With the forceps, the cervix is drawn well back and a uterine catheter inserted into the uterus. Then with one hand in the rectum the uterus is massaged and drained. It is surprising what a quantity of tissue detritus can be siphoned from some of these cases. When no more shreds will come away eight ounces to one pint of iodized mineral oil is injected and allowed to remain in the uterus. The oil should be warm. Cool or cold oil will cause considerable shock. If it is not convenient to warm the oil, charcoal, two or three ounces may be used instead. No water or watery solution should be injected into these uteri.

An old, small size, koroseal stomach tube, cut in the middle, makes two very serviceable catheters for draining the uterus.

Care of Dairy Calves

The care of dairy calves is important. The dairyman should raise his herd replacements, wherever that is practical. Disease control is less difficult in the self-contained herd, than in the herd where replacements are purchased. If the loss from brucellosis, mastitis and other ailments due to additions to the herd by purchase were added to the price of the replacements the dairyman would realize more fully the desirability of giving selected calves the necessary care to raise them.

Calves should be supplied dry clean bedding. Since the use of the combine has become general in Iowa, farmers are not bedding

their livestock sufficiently. They don't have enough straw.

I advise clients to leave the calves with their mothers for the first 12 hours. It is very important that they get the colostrum milk. It is also important that the udder be kept clean. Soiled udders are a prolific cause of diarrhea in calves. After 12 hours take the calves from the cows and withhold feed for 24 hours. It is easy to teach calves to drink when they are hungry.

The calf should receive a daily ration of milk equal to 10% of its body weight. This should be given in three feeds. Many advise a ration of 6% of the body weight. It is too little for Holstein calves. They get thin on it. Holstein-Friesian milk causes the least, and Guernsey milk the most, trouble in feeding calves. Many advise the addition of limewater to the milk, for young calves. I don't approve it, if it replaces part of the milk, except in Guernsey milk in which case one-fourth pint of lime water per feeding is enough.

Nothing in the whole process of raising calves is more important than cleanliness. The feeding utensils must be washed, sterilized and sunned or at least aired after each use. The bedding must be clean. Even young calves will pick at their bedding and if it is filthy wet straw, it will cause diarrhea.

The best treatment for infectious white diarrhea is 150 to 200cc of the dam's blood. It should be given subcutaneously or perhaps intraperitoneally. Injecting it intravenously causes shock too often. The earlier it is given the better. In a herd where calves are being lost from white scours, it is well to administer the blood as a prophylactic soon after the calf is dropped.

Torsion of the Uterus

Torsion of the uterus occurs rather frequently in dairy cows. Williams states he has not seen it in beef cows. It is probably due to flaccid abdominal walls. Torsion of the uterus may occur at any time after the fifth month of gestation. Most cases rotate away from the rumen, i. e., clockwise.

The symptoms of uterine torsion are manifestations of colicky pain—kicking the belly, switching the tail, stamping and uneasiness. The animal may show signs of approaching parturition. If the uterus is not righted, adhesions may occur and the fetus will die. If the rotation is not more than a one-half turn the hand may enter the uterus if the os is dilated. If it is more than a 180 degree turn the hand cannot be forced through the cervix.

If the twist is less than a one-half turn and the hand be forced into the uterus the organ can often be righted in that way without too much trouble, but if the twist is more than a one-half turn, surgical replacement is the quickest, easiest and surest method.

I advise clients to leave the calves with their mothers for at least 12 hours

The cow should be placed in her stanchion and the hind legs tied loosely to prevent kicking. An area in the right flank should be prepared as for an abdominal operation. Local anesthesia is quite adequate. The external abdominal muscle is incised and the internal separated. Care should be observed not to push the peritoneum away from the abdominal wall.

The uterus, when it is reached, seems unduly large and to be filled with fluid. If possible one should find some part of the fetus to hold to—a hock or an elbow offers the best hold. Untwist the organ by first twisting it farther then rolling it back and forth a few times with a rocking motion, and then suddenly rolling it all the way over. When it straightens fluid will usually gush from the vulva.

The fetus should be delivered immediately if the os can be dilated sufficiently. Care should be observed not to tear the cervix. It should be remembered that the circulation in the cervix has been shut off for a time and the tissue is friable.

Fractures

Dairy cattle suffer many fractures of the bones of the legs. We pack the limb well with cotton and incase in a metal splint made of heavy galvanized iron, and shaped to encircle the leg. When in place it should reach to the toes in front and be wired to them by means of holes drilled through the hoof. The splint should be removed at short intervals and the packing renewed. If the splint is made in two parts hinged together at the rear it is a convenience in removing and replacing it. When it is no longer needed, the dairyman returns it and it is ready for the next case.

Artificial Insemination in Range Cattle

By JAMES M. UNGLES,
San Carlos, Arizona

ARTIFICIAL breeding as applied to cattle under range conditions is of fairly recent development. Since there has been little information published in veterinary literature concerning the subject, it seems desirable to set forth some of the procedures involved and problems encountered.

The herd under discussion consists of 1200 purebred Hereford cattle belonging to the San Carlos Apache Indian Reservation. This herd is maintained on 87,000 acres of well grassed range which is in open country and free from brush. The purpose of the herd is to produce high quality range bulls to turn with the main herd of some 20,000 grade cattle which are grazed on other ranges on the reservation.

One of the greatest problems involved in artificial breeding in range cattle is finding the cows while in heat. The period of estrus in range cattle in Arizona is short, usually no longer than six or eight hours. When sufficient feed is available, the best method of handling the cows is to put them in a herd in the day time and corral them at night. In the morning, the cows in heat are cut out and inseminated. Again in the evening after the cows are corraled the cows in heat are inseminated. By this means, few cows come in estrus without being noticed. However, during much of the breeding season, this procedure was not possible. The cows to be bred were turned into a pasture and each day Indian riders picked up the cows in heat.

This did not permit close observation of the herd and consequently some of the cows passed through several periods of estrum before being bred.

A vasectomized, two-year-old Holstein bull was turned in with the cow herd to aid in detecting cows in heat. In this instance this procedure proved unsatisfactory due to the occurrence of an infectious vaginitis which was spread by the bull.

A cow in heat is noticeable by her nervous, restless disposition. Two cows in heat will stand together and take turns mounting each other until the period of estrum is passed. Observations of the length of the estrous cycle of cows in this herd made by Lasley and Bogart revealed that 79% of the cycles were between 17 and 23 days in length.[1].

Several bulls were available for use during the breeding season, which in 1945, the year under discussion, extended from April 23rd to September 10th. However, one outstanding individual W. H. R. Royal Mix, was used most extensively, and during this breeding season 828 cows were inseminated with semen from him out of a total of 1004 cows in the herd that were inseminated artificially. Usually collections of semen were made every other day. It was diluted and used the day collected, and on the following day. A few collections were used after storing for 48 hours. Although no semen was used after a longer period of storage, it appears that semen thus stored and handled would be suitable for use for a longer period.

A total of 56 collections of semen were made from Royal Mix. Up to 41 cows were bred from a single collection. It would have been possible to breed many more cows from one collection had the cows in heat been available. The average volume of the 56 collections was 6.1cc. On only four occasions did the motility rating (determined microscopically) fall below 5 (0 being no motility and 5 being the highest rating). The sperm concentration, as estimated microscopically, was maintained favorably during the entire breeding season. From this, it appears that extensive use of a vigorous, healthy Hereford bull has little detrimental effect upon semen volume, concentration or motility.

The method of collection varied somewhat from that used in dairy herds. Some of the bulls refused to attempt to copulate when the cow was restrained in a collecting chute. Therefore, when collections were to be made, a cow in heat was turned loose in a small corral and the bull turned in with her. No restraint was used on either animal. An artificial vagina 12 inches long and equipped so that the water jacket could be partially inflated with air was used. The operator should stand behind the bull and slightly to the left or right depending upon the side from which the collection is to be made. As the bull mounts the cow, the operator steps up to the side of the bull and directs the bull's penis into the artificial vagina by grasping the sheath. Collections can be made successfully from either side.

Care was exercised that the animals were not distracted by sudden and unnecessary movements or other disturbances.

Immediately after collection, the semen was taken into a small laboratory, the volume determined and motility and concentration of spermatozoa was estimated by microscopic examination.

Phillips' egg yolk buffer was used as a diluent and most samples were diluted 1 to 4

or 1 to 5. The phosphate solution was prepared in 200cc quantities and stored in a refrigerator. It was mixed with an equal volume of fresh egg yolk. The diluted semen to be stored was placed in a quart thermos bottle containing crushed ice in the bottom over which was placed a layer of cotton. The thermos bottle was then placed in a refrigerator until the semen was to be used. A thermos bottle was used because in some instances it was necessary to transport semen several miles from one breeding station to another.

A portion of the Purebred Herford herd

Cows to be inseminated artificially were restrained in a squeeze chute and the vulva cleansed with water. The uterine method of insemination was used in which one hand was placed in the rectum and the cervix grasped. A glass capillary pipette, 18 inches in length, attached to a 2cc glass syringe was carefully worked through the cervix and 1cc of diluted semen deposited in the uterus. A total of 1267 inseminations were made on 1004 cows of the herd. How many of the 1004 artificially inseminated cows actually conceived was not determined. Examination per rectum on 308 heifers and dry cows, which were artificially inseminated at the beginning of the breeding season, revealed 277 or 89.93% to be with calf. Fertility is lowest in heifers and dry cows are harder to settle than lactating cows.[1] The remainder of the herd should show an even higher conception rate.

Artificial breeding has been practiced in this herd since 1939. So far, the results have shown that calves obtained by artificial insemination are as vigorous and healthy as those obtained from natural breeding methods. Williams states that "Artifical insemination by any technic yet announced, is inapplicable to range beef cows."[2]. The procedure as outlined above has proved a practical one since artificial breeding was started in this herd. The labor of four mounted men is required in addition to the technician doing the breeding work. By this method, disturbance to the cow herd is held to a minimum and accidents to cows or calves are negligible.

References

1. Lasley, John F. and Bogart, Ralph. Some factors influencing reproductive efficiency of range cattle under artificial and natural breeding conditions. Research Bul. 376, University of Missouri, Columbia.

2. Williams, W. L. Diseases of the Genital Organs of Domestic Animals. p. 179. 1943.

Prescience

D. E. Salmon, first Chief of the Federal Bureau of Animal Industry, wrote in 1906: "When public sentiment favors the eradication of tuberculosis in animals, the task will not be found an impossible one."

Streptomycin Stable

Streptomycin salts containing less than 1% of water have shown no deterioration in antibiotic effect after being kept for a year at room temperature. It is thus the most stable of antibiotic agents so far discovered.

Restrictions on Use of Streptomycin

Because of the restricted supply the use of streptomycin is limited to researchers. Allocations are made by the Civilian Production Administration to the Army, Navy, Veterans' Administration and to certain hospitals and physicians for use in a program of clinical investigation.

Grants in aid from 11 pharmaceutical and chemical companies are supporting a civilian clinical research study sponsored by the committee in which nine diseases are to be treated with the drug. These diseases are—undulant fever, typhoid fever, tularemia, bacterial endocarditis, paratyphoid fever, meningitis, middle ear disease, laryngotracheitis, and gram negative infections of the kidney and bladder which are resistant to sulfa drugs.

Thirty-seven per cent of the available streptomycin has been allocated for this study. A patient with any of the diseases listed, to secure the drug must be under the care of an accredited hospital physician or his own physician if he agrees to furnish full information to the committee. Neither the patient nor the physician receiving streptomycin through allocation by the committee may pay for it, for the one-half million dollars subscribed by the 11 companies mentioned support this study.

Since trypsin enzyme from beef pancreas is needed for the preparation of streptomycin, the meat shortage may be to blame, in part, for the small supply of the drug produced.

Recent Views on Nutrition*

Although no epoch-making discoveries in nutrition have been reported during the year, there are many evidences of an inching forward toward a better understanding of the part proper nutrition plays in the physical well-being of man and animals. Some of the reports, though still in need of additional confirmation, are probably of sufficient interest to be mentioned; others represent newer views on information which is not so new. We shall consider them under the major headings of carbohydrates, proteins, minerals, vitamins and discuss the recently recognized critical periods.

Carbohydrates

As a view of the present situation, it has been suggested that the most common deficiency among livestock is a lack of sufficient energy feed and what we need for the heavy roughage consumers is more pasture and larger mangers with more feed to fill them.[1] The part roughages and pasture crops should play in animal nutrition is sometimes minimized in these days of ground grains and protein and vitamin concentrates.

Protein

It has been observed that a factor or factors concerned with hatchability in poultry is present in certain animal products, but is partially lacking in a presumably complete all-plant ration in which soybean oil meal serves as the chief source of supplemental protein.[2] In an experiment, only 70% of the fertile eggs produced on the all-plant ration hatched in comparison to 88% when the soybean oil meal was replaced with an equivalent amount of scrap, or 89% when replaced by a fish meal protein. Including 5% of dried skim milk in the meat scrap or fish-meal ration did not improve the hatchability of the eggs, whereas, when added to the otherwise all-plant ration, it accounted for a 14% increase in hatchability.

Within recent months a by-product of the fishing industry known as fish press water and obtained from the hydraulic extraction of oil from fish has become available. The results of feeding it to poultry have indicated that it may be a good source of methionine and possibly other important nutrients.[3] It is reported to give good results in combination with soybean oil meal.

Evidence has appeared in the literature that one of the results of protein undernutrition is the impairment of the antibody mechanism, or the acquisition and retention of specific resistance. Experiments with laboratory animals indicated that well-nurtured animals produced ten times the antibody concentration produced by hypoproteinemic animals following injection of an antigen. When high quality proteins were fed to the hypoproteinemic animals there was a rapid recovery of the ability to produce specific antibodies.[4]

Evidence has also appeared to indicate that on the occasion of trauma, burns, fracture, extensive surgery or other cause of tissue injury in a healthy individual, a breakdown of reserve protein occurs to provide specific fractions for repair of the injury.[5,6,7] The depleted individual is incapable of supplying this reserve protein and thus, presumably, is at a disadvantage.

These observations suggest clinical applications to the surgeon and the therapist. In animals on questionable rations it may be wise to insure protein repletion, either by feeding high quality proteins or intravenous injection of pure amino acids, as a preoperative measure and as an adjunct in the treatment of infectious processes or trauma.

About 10 years ago, the role of thyroxine in stimulating the intensity of milk and fat secretions was discovered. It caused a marked rise in milk yield and an increased fat content of milk in cows in the declining stages of lactation. The feeding of thyroxine is too expensive to be practical and the frequent injection would not be feasible. As a substitute, it has been discovered that iodine and casein, or other proteins rich in tyrosine, can be converted into a synthetic thyroprotein having the same physiologic properties as thyroxine. It will probably be cheap enough to warrant feeding, providing the desired effect can be produced without undesirable effects.[8] Questions yet to be answered are, whether feeding thyroprotein for increased yield will be economical and whether it can be fed for long periods without injury to the cow. In partial answer to the latter question, a report from Scotland[9] indicates that considerable disturbance of metabolism follows prolonged use of thyroprotein and that there is danger of some degree of illness. In a report from Louisiana[10] doubt is expressed that the increased production, obtained under Louisiana conditions, would be great enough or would continue over a long enough period to justify possible injury to the cows. These reports emphasize the need for further and extended experimental trials.

*Report of Committee on Nutrition, 64th Annual Meeting, Illinois State Veterinary Medical Association, Springfield, January 17-18, 1946. C. C. Hastings, V. B. Beat, L. A. Gray, and C. C. Morrill, chairman.

Minerals

Although defluorinated natural phosphates may serve as an emergency source of phosphorus in the rations of farm animals, they are reported to be inferior to steamed bone meal.[11] Natural phosphates containing considerable iron or aluminum are relatively unsatisfactory, presumbably because the phosphorus is rendered unavailable by these elements. In the defluorination of rock phosphates it was found better to carry out the process at 1010°C. than at the lower temperatures of 600°C. or 760C.°

In a recent feeding test at Purdue University[12] to demonstrate the importance of salt for swine, one group was denied salt in any form while another group received salt, free choice. The animals receiving salt, free choice, had better appetites, put on 96.5% more weight in the same feeding period, ate 173.5 pounds less feed per 100 pounds of gain, and cost $3.85 less per 100 pounds of gain. While not demonstrating any new principle, this experiment serves to remind us of the importance of common salt in the ration of swine.

The discovery of cobalt deficiencies in cattle in parts of Michigan[13] and Wisconsin[14] bordering on Lake Michigan, suggests that the possibility of this deficiency should not be overlooked in northeastern Illinois in the event of the appearance of syndromes involving inappetence, unthriftiness and anemia.

It has has been suggested by workers at the University of Wisconsin that some sterility in cattle may be associated with rations low in manganese. Recent studies have also indicated that the manganese requirement for certain individual cows may be fairly high.[1] Although it is known that corn and alfalfa hay are frequently low in this element, the results of animal experiments have not advanced far enough to justify the universal addition of manganese compounds to feeds for livestock other than poultry. In poultry, manganese deficiency affects hatchability adversely as well as making the chicks more susceptible to perosis.[2]

It has been reported that some of the minerals often deficient in cattle rations function in the rumen by feeding the microöganisms in the paunch which influence nutrition.[1] The specific importance of this situation needs clarification.

Vitamins

Until recently it was generally accepted that spasms and paralysis in vitamin A-deficient young animals were the result of a direct degenerative effect upon nervous tissue. A few years ago it was reported[15] that vitamin A deficiency retards bone growth very promptly, but is much slower in retarding growth of nervous and other soft tissues. Therefore the central nervous system becomes too large for its bony encasement, resulting in compression and accompanying lesions. Recently our attention was again called to this view.[16]

Preliminary work suggests that the "anti-infective" effect of vitamin A may be merely an effect on the appetite.[17] In view of the widespread and popular belief in the anti-infective value of vitamin A it is to be hoped that further work will be conducted along these lines.

It has been shown that, even with good roughage available, rickets in calves can occur because of overfeeding on milk and unfortified grain.[18] It has been proposed that many calves, especially those born in the fall, may suffer from subclinical vitamin D deficiency and that some minor change in feeding or management may bring on rickets in active form.[19] If this be true, it is desirable to supplement the ration during fall and winter months with a vitamin D concentrate which should be selected solely on the basis of cost per unit of vitamin D. The commercial practice of adding one-half pound irradiated yeast per ton of calf feed, or 1% of vitamin D feeding oil or 0.25% fish liver oil concentrate to the feed, supplies the minimum requirement plus a variable margin of safety.

Vitamin D is of singular importance in poultry hatchability. The needs for optimum hatchability are somewhat higher than for production and several times greater than for growth.[2]

The results of experiments conducted at Cornell University indicate that "stiff lamb" or "white muscle" disease may be associated with vitamin E deficiency.[20] Over a period of 12 years, 26% of the lambs were affected with stiff lamb disease when the dams were fed a ration composed of alfalfa hay, cull beans, oats and barley. When liberal amounts of bran were added, the incidence of the disease was greatly reduced. When unextracted wheat-germ meal was added, the disease was almost completely prevented. When certain tocopherols were fed to both ewes and lambs, no stiff lambs were seen. Six of seven affected lambs recovered following treatment with the di-sodium salt of d, 1-alpha-tocopherol phosphoric acid ester, while five of six untreated lambs died.

The question of the possible relationship between equine periodic opthalmia and nutritional etiologic factors has been raised.[21] A marked decrease in ascorbic acid in the ocular fluids in this disease has been noted and the

suggestion has followed that a lack of certain dietary essentials, notably riboflavin, may influence the synthesis of ocular ascorbic acid or its protective substances. This thesis needs further support, however.

Riboflavin exerts a profound effect upon hatchability of eggs and viability of chicks hatched. It is now stated that by adding to or withholding riboflavin from the feed, hatchability may be affected as much as 75% within two or three weeks.[2]

Critical Periods

Experimental results have shown that certain periods in the productive cycle of farm animals, which had previously been considered as nutritionally unimportant, are really so important as to be considered almost critical. In swine it has been demonstrated that, under drylot conditions the gestation and the lactation periods are critical, as well as the period preceding the attainment of a body weight of 75 pounds in the weanling pig.[22] On pasture, the feed ingredients which need to be supplied are quite well known; however, under drylot conditions a deficiency of the vitamin B_2 complex and other unknown factors results in poor farrowing performance, poor viability of farrowed pigs, and poor growth rates in sucklings. There is evidence that grazing rye pasture during gestation has a residual effect on the sow and upon her pigs during lactation.[23] It appears that the necessary factors are transmitted through the milk. In view of the fact that the amino acid content of the milk is quite constant, it appears that these factors may be vitamin and not protein in nature, and that they may be stored in the sows' tissues until utilized during lactation.

Likewise, it has been shown that the condition maintained in the dairy cow during the dry period, previously considered a nutritionally unimportant period, has a definite effect upon the production level during the subequent lactation. One report,[24] indicates that, in Holstein-Friesian cows, for each pound gain in body weight during the dry period a total of 25 additional pounds of milk may be expected during the subsequent lactation, within certain rather wide limits. In Guernsey and Jersey cows the increases in production per pound gain in body weight were 20 and 15 pounds of milk respectively.

Summary

The observations reviewed in this report indicate that, as a profession, we need to be nutrition-minded, able to recognize the complex deficiencies, and conscious of the fact that the well-nourished animal is better prepared to survive the effects of surgery, trauma, and the onslaughts of infectious or parasitic disease than is the poorly nourished animal.

References

1. Huffman, C. F.. The nutritional deficiencies of farm animals on natural feeds. Proceedings Ohio Animal Nutrition Conference, pp. 13-18. 1945.

2. Bethke, R. M. Nutrition and hatchability. Proceedings Ohio Animal Nutrition Conference, pp. 35-37. 1945.

3. Boucher, R. V. Poultry nutrition up to date. Proceedings Ohio Animal Nutrition Conference, pp. 31-34. 1945.

4. Cannon *et al.* The relationship of protein deficiency to infection. *Nutr. Rev.* 3 pp. 78-79 1945.

5. Post-traumatic nitrogen deficit. *Nutr. Rev.* 3, pp. 86-88. 1945.

6. Nitrogen balance in burns. *Nutr. Rev.* 3, pp. 2-3. 1945.

7. Nutritional factors in surgical convalescence. *Nutr. Rev.* 3, pp. 15-16. 1945.

8. Brownell, S. J., Cannon, C. Y., Krauss, W. E. Norton, H. W., Jr., Turner, C. W., Weaver, Earl and Reed, O. E. Some changes that may influence the dairy production business of the future. *J. Dairy Sci.* 28, pp. 727-736. 1945.

9. Iodinated protein and milk production. *Vet. Rec.* 57-29, p. 350. 1945.

10. Seath, D. M., Branton, Cecil and Groth, A. H. Effect of feeding iodinated casein on production and health of milking cows. *J. Dairy Sci.* 28, pp. 509-517. 1945.

11. Ellis, N. R. and Cabell, C. A. The biological availability of some defluorinated, natural and synthetic phosphates. *J. An. Sci.* 3, p. 446. 1944.

12. 1945. Morton Salt Leaflet, 1945.

13. Killham, B. J. Cobalt deficiency in some Michigan cattle. *J. A. V. M. Assn.* 99, pp. 279-282. 1941.

14. Geyer, R. P., Rupel, I. W., and Hart, E. B. Cobalt deficiency in cattle in the northeast region of Wisconsin. *J. Dairy Sci.* 28, pp. 291-296. 1945.

15. Wolbach, S. B. and Bessey, O. H. Vitamin A deficiency and the nervous system. *Arch. Path.* 32, pp. 689-722. 1941.

16. Wolbach, S. B. Pathology in relation to nutritional research. *Nut. Rev.* 3, pp. 193-195. 1945.

17. Vitamin A deficiency and infection. *Nut. Rev.* 3, pp. 229-230. 1945.

18. Hibbs, J. W., Krauss, W. E., Monroe, C. F. and Pounden, W. D. A report on the occurrence of rickets in calves under farm conditions. *J. Dairy Sci.* 28, pp. 525-529. 1945.

19. Krauss, W. E. Supplementary vitamins for calves. Proceedings Ohio Animal Nutrition Conference, pp. 23-29. 1945.

20. Willman, J. P., Loosli, J. K., Asdell, S. A., Morrison, F. B. and Olafson, Peter. Prevention and cure of muscular stiffness ("stiff-lamb" disease) in lambs. *J. An. Sci.* 4, 128-131. 1945.

21. Jones, T. C., Baurer, F. D., and Roby, T. O. The role of nutrition in equine periodic ophthalmia. *Am. J. Vet. Res.* 6, pp. 67-80. 1945.

22. Krider, J. L. Recent developments in swine nutrition. Proceedings Ohio Animal Nutrition Conference, pp. 47-53. 1945.

23. Fairbanks, B. W., Krider, J. L. and Carroll, W. E. Effect of diet on gestation-lactation performance of sows. *J. An. Sci.* 4, 410-419. 1945.

24. Purina Mills. Feeding the dry cow. *Nut. News Bul.* 1:3, pp. 1-4. 1945.

Differential Diagnosis of Swine Erysipelas*

THAT we have swine erysipelas in this country there can be no doubt. That it is increasing in prevalence in the cornbelt and eastward seems equally certain. According to the most authentic reports available, the incidence of the disease east of the Mississippi River has increased markedly in the past three years. It is equally indubiable that in many outbreaks on farms it is difficult to differentiate it clinically from hog cholera.

Swine erysipelas occurs in four forms—(1) septicemic, (2) arthritic, (3) cardiac, and (4) cutaneous. In the matter of differentiating this disease from hog cholera we need be concerned only with the septicemic form. The arthritic, cardiac and cutaneous forms are unlikely to be confused with hog cholera.

Two types of the septicemic form of swine erysipelas occur—acute and subacute. The latter can be a mild disease with a low mortality; the chief economic loss resulting from retarded growth. However like the the arthritic and cutaneous forms which run a chronic course the subacute type may suddenly merge into the acute septicemic form and entail a high death loss.

As a means of differentiating an outbreak of acute septicemic swine erysipelas from hog cholera the history is important; not only a history of the herd but a history of the farm for the past three or four years. The septicemic form of the disease occurs suddenly. The first the owner knows of anything being seriously wrong with his herd may be the finding of a couple of dead hogs when he goes out to feed his herd in the morning. Hog cholera may begin in this same way. In fact it is common in hog cholera for only one or two animals to be attacked in the beginning and for a week or ten days to elapse before other animals sicken. However, in the case of hog cholera, the owner will usually have noted that the animals he finds dead were ailing for a few days, perhaps that they didn't eat and stayed in their beds much of the time. On the other hand if he is the unobservant type finding the dead hogs as in the case of swine erysipelas may be the first notice to him that anything is wrong. Quite likely the veterinarian will not be called until other animals sicken or die and when he arrives the foregoing history will hold little significance for him in determining the disease with which he has to deal.

A history of the farm is likely to be more informative. If the disease is erysipelas it will often have been present on the farm in a chronic form for one or more years. It may not have been recognized as erysipelas but if questioned the owner can often recall that he has seen a good many lame animals and some with enlarged joints or that his pigs have lost parts of their tails and the tips of their ears or that there have been swellings in the skin and patches have peeled off or that his pigs have not grown evenly. Litter mates may have varied up to 50% in weight at six months or a year of age. The loss of pigs before weaning may have been unusually high.

In the chronic form of erysipelas the infection may have lingered in the herd for months—even a year or longer before deaths occur

In the case of hog cholera the history of the herd in preceding years is not likely to be significant except for the probable absence of chronic swine erysipelas. We shall want to know if the herd has been vaccinated and when. If the work was done by a veterinarian or if the owner did it. The health of the animals at the time of vaccination and how the herd was cared for, particularly how it was fed immediately after being vaccinated and whether or not it has been thrifty during the past weeks or months.

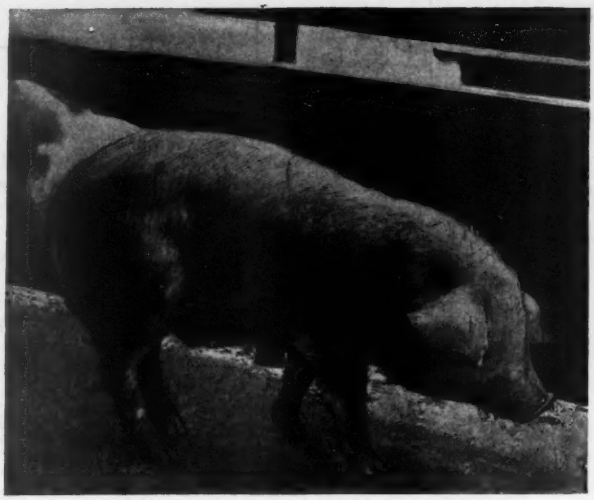
In a herd that has not been immunized against hog cholera great care must be observed in deciding that the outbreak is or is not cholera and a decision must be reached promptly. If the outbreak is cholera and the administration of serum and virus is delayed, that herd is headed straight for disaster. A laboratory examination will usually enable one to make a definite diagnosis but it will take too long. If the disease is cholera the herd will be past salvaging by the time the report from the laboratory is received.

Principal reliance in making a clinical diagnosis will be upon the symptoms. Recumbency is an outstanding characteristic of both diseases but when a stranger approaches the recumbent animals, if the disease be erysipelas, the sick animal will jump up quickly, perhaps squealing with pain, and move off in a hurry. It is not weak. It is active, alert, nervous and excited. If feed is thrown to the herd it will

*Notes from an address on Differential Diagnosis of Swine Erysipelas and Its Control, by Dr. H. C. H. Kernkamp, St. Paul, Minn., at the 21st Annual Conference for Veterinarians, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Feb. 26, 27 and 28, 1946.

eat some. If the disease be cholera the sick animal will have to be kicked from the bed and it will not move away. If driven away it will move slowly and probably sway in the hind legs from weakness. It will not eat. It may have a diarrhea and will look gaunted. The animal exhibits depression in every action.

In swine erysipelas the eye is bright. In hog cholera it is dull and a thin discharge later becoming purulent moistens the hair below the inner canthus. In erysipelas the temperature is usually about 107° F. or higher, even up to 110° F.; in cholera it is not so high. If the animals have light-colored skins bright red areas may be found in erysipelas; in hog cholera bluish red or purplish areas often, but not always, may be seen on the belly. In swine erysipelas the ears may be edematous and by passing the hand firmly over the body edematous areas often can be located. In cholera the skin is smooth and pliable. In both diseases the breathing is labored. As previously indicated the attitude of the animal is important. In hog cholera it is depressed, slow and reluctant in every movement; in swine erysipelas it is nervous or excited, alert and moves quickly, albeit—often painfully, until it approaches death.



An animal in an advanced stage of acute hog cholera

Not fewer than two and, better, as many as six animals should be examined post mortem. Both swine erysipelas and hog cholera are general septicemias and many of the lesions are similar, or identical, for both diseases. However, characteristic lesions of swine erysipelas are: irregular red areas on the skin, edema and swelling of the lungs, ecchymotic areas on the epicardium, passive engorgement of the spleen, swelling and ecchymosis of the lymph nodes.

The agglutination test for swine erysipelas is not dependable at present. It will pick the positive cases and along with them many negative cases. There are hopes of it being improved however.

In an outbreak of acute, septicemic swine erysipelas there are likely to be some cases of the subacute type. These, if present, will help to establish a diagnosis. The outstanding symptom is swelling of the joints. The swelling is often located in the periarticular structures and if of long standing usually spicules of adventitious bone will extend into the swelling from the outside. The synovial membranes also are involved.

In some cases a so-called field test can be made and if it can be completed within 24 hours, it is usually worth while to make it. If swine erysipelas antiserum is administered to several animals having well developed cases of swine erysipelas some, and probably all of them, will be much improved in 24 hours. This improvement is of great diagnostic value, since if the disease is cholera there will be no improvement from the use of swine erysipelas antiserum.

When necropsies are made in cases of suspected swine erysipelas, regardless of the diagnosis made, specimens should be collected for laboratory examination. The information thus obtained may prove very useful later. The tissues selected for laboratory examination should be spleen, heart, kidneys and an articulation. As a rule, the isolation of *Erysipelothrix rhusiopathiae* is not difficult from tissues of an acute case of swine erysipelas.

The first indication of the acute form of erysipelas may be one or more hogs found dead. Others sicken rapidly. The temperature, which in the beginning is likely to be 108° F. or higher, usually drops to 104 or 105° F. within 24 to 48 hours

Veterinary Practice—I

By E. T. BAKER
Moscow, Idaho

Foreword

This series of discussions on veterinary practice is a follow-up of the "Autobiography of a Veterinary Practitioner."

They are not to be considered as dogmatic even if statements sometimes so appear. They are offered for what they are worth in case the reader has anything to trade.

Of course, not all readers will agree with all my observations. To disagree is their privilege. Unless one is in the army or a married man, one has a right to one's own opinions.

Every practitioner could write a series of discussions of this type that I would enjoy reading, if he would only take the time and trouble to do it. The writer merely happens to be one of those who likes to jot down his experiences, and to pass them along to others.

I. Education: After 36 years' experience of my own and the observation of the careers of many veterinarians in every branch of veterinary activity, I have little to offer on the subject of education.

To me, college attendance is merely a preliminary stepping stone to introduce us to our profession. The grades that we make or the honors that we win make little difference in later years. Every man, as has been said, is the architect of his own fortune. There are no short-cuts or primrose paths to success.

II. The Destiny of Man: However, often beyond our control, luck plays a prominent part in shaping our lives. In this connection, I think of the difference in the fate of different generations. One enters manhood or womanhood during a time of peace and prosperity, and immediately launches into a normal, happy life. The next generation may come along during a period of war or depression, and have their lives "messed up" right at the start.

The same may be said of our professional careers. Some of us start under very favorable circumstances. With prices good, farmers and livestock men are prosperous. We are called when we are needed and paid when we leave. We are busy and make money. Others, just as competent as we are, graduate when the fortunes of agriculture are at a low ebb. Farmers can hardly pay their taxes, and the value of livestock is very low. They hesitate to call us until the patient is nearly dead, and when we do make the call, we have to "put it on the books." Over the whole period of one's professional career, it may not make much difference whether the income of that first year is large or small, but it makes a lot of difference right then, to most of us.

Proper education may help to offset the effect of good or bad fortune on our lives. It is a good thing for our general economic stability that the American youth is so adaptable to circumstances. When properly adapted to a certain course of education, this native ingenuity is augmented.

No one can foretell what a certain boy or girl may be doing 10 or 20 years hence. I have mentioned elsewhere how it appeared in college that my room-mate would become a successful country practitioner, while I was more fitted for editorial or research work.

What happened? My room-mate has not practiced a day; having always held a state or other official job. I have been a general practitioner for over 30 years, and have made more than 35,000 professional calls. That supports the old maxim that one can never tell how far a flea can jump by the color of its eyes.

III. Natural Aptitude: It is too bad one's education cannot add to natural aptitude, which is an undefinable quirk in human nature. It creates outstanding writers, great musicians, successful stock raisers and gifted business men. One either is, or is not, born with "it." This quality of human nature seems to be separate from personality. This latter trait may make one very likeable and congenial, but still utterly worthless from a utilitarian viewpoint. Washington Irving gives a very good example of this in his description of Rip Van Winkle.

IV. The Individualist: As I write these words, I think of my days in federal meat inspection. Standing on a wet killing floor in a steamy room "tramping guts" I used to count the hours till quitting time. To me, it was plain drudgery, for routine work bores me. I like variety and change. I would probably go crazier than I am now, if I should work for a few days in an auto factory when my task would be to fasten one nut. I knew the work of meat inspection was as important as any I could do and that the experience was adding to my none too plentiful store of knowledge, nevertheless it irked me no end.

I enjoy practice. Each day is a new adventure. I look forward to it, and the hours pass swiftly. Perhaps, at breakfast the phone rings, and I hasten out to treat a case of milk fever. When I return, a boy has his puppy in to be

immunized. Again the phone rings, and I drive out 10 miles to see a foundered horse. Then comes the time when I go around the various city meat markets, and after dinner I answer questions sent to me by a big farm journal, in which I edit the veterinary department. After dinner I may be called out on a difficult calving case, which requires some real energy, and later on to "doctor" a canker of the ear in a cocker spaniel. In between times, I work on the manuscript for a

Some of my work has been difficult

book or various articles, or listen to the radio or read the daily papers and magazines.

Before I realize it the day has slipped by. Some of my work has been easy and agreeable; some has been somewhat difficult and "messy" but that makes no difference to me. It is accepted as the fortunes of war. Best of all, I am my boss. In other words, I am an individualist, and I cannot help being just that.

This personal slant is brought out because I am more familiar with it than with many other problems. Further it may help the reader to better understand my quirks.

Ambition is usually listed by the wise as one of the most desirable of characteristics. Maybe so, but lack of it has meant a good deal to me in satisfaction and contentment. I realized my own limitations, and that I would never make a brilliant practitioner. This I think has accounted for a lack of envy for other people's success. If a friend of mine could make more money or have a bigger home than we had, I was genuinely glad for him. As long as I had a comfortable home, with a pleasant family and plenty to eat and was out of debt, what more could I wish for?

A streak of irresponsibility in my make-up prevents me from taking things very seriously. Many men better equipped than I have fallen by the wayside, because they wanted to be important, to be "big shots." They were always under a mental and physical strain, and usually in ill health. By the time they were 40 or 50 they were worn out and no one cared.

V. College Training: Frankly, my college education did not prepare me for practice. I didn't give it a chance. I cut clinics regularly for, being the private secretary of the dean, I was a privileged character and took advantage of it. I was often among those not present in the dissection laboratory, but I was typewriting Doctor Sisson's monumental work on veterinary anatomy and probably learned a little by doing that.

However, I took topographical anatomy seriously and learned how to locate the various large blood vessels so as to avoid them while trying to perform an operation. The object was to obviate having to stop the hemorrhage which often requires hard work.

VI. The Human Element: Making friends and finding out what was going on always interested me. Perhaps this was partially due to my early training as a newspaper reporter. After meeting a person once I could nearly always recognize him afterwards. My secret was to learn how to spell his name and to associate him with a certain landmark. For example, I would meet Eli Sniffenjigger, who was in the milking shorthorn industry and lived near the Evergreen school house. His only boy was in the 4-H club, and his wife an active member of the Eastern Star. So, when I would meet Eli later, I would associate him with these items of human interest and ask him how the Shorthorns were doing, and if the boy was preparing a heifer for the junior livestock show, and how Mrs. Sniffenjigger enjoyed the grand chapter meeting at Tacoma, and so on.

Or, perhaps a young woman would bring in a Pekingese pup to be inoculated against distemper. Now, I might forget her name, but when next we met, I would ask about the pooch, and pretty soon she would be telling me all the news. My long suit has always been to get people to talk about themselves and their interests. I would get them to talk about their boys in service and where they were, and they would want to know where my boy was, and so on.

I would always ask Grandpa about his arthritis and, after he had gone into all the details, I would switch the subject to early days in the community and pretty soon I had a history of the entire neighborhood. When I asked little Willie how his throat was after his tonsillectomy, he would brighten up and show me his rabbits.

By doing this I made many friends, for people dearly love to talk about themselves, or their life histories, even as you and I.

This was not hypocritical but from a natural interest in persons and things. I mention it only because I believe it has made friends for me and been a factor in building my practice. It might be useful to some others. For

example, our county is about 60 miles long and 40 miles wide containing about 1600 ranches, ranging from 40 to 2,500 acres, and I have been on all of them. To me, a call out in the country is an adventure. The client is my chief interest for I know most of my patients will recover regardless of my treatment. Some of my clients never call me until the animal is dying and others call me in plenty of time, so why worry?

If the client is contemplating building a new house or barn, or other improvements, I go over the prospective site and offer suggestions. I know very well they will never be given a second thought. Often, the farmer's wife comes along and when I mention something she has had her heart set on, such as a laundry in the basement or a deep-freeze locker compartment that makes a friend for life. This is not just put on, I enjoy it.

It is much like the various salesmen for the supply firms who call on me at irregular intervals. Some are congenial and tell me all the news, and very seldom talk about their wonderful "new specialities," for they know I am usually familiar with them. I like these fellows and invite them for dinner and a home-cooked meal, and we have a fine visit. Sometimes I give them an order that might not be given if I did not like their personalities. Other salesmen, full of business but with no interest in anything except an order, bustle into my place, and then bustle out again. They have no friendly feeling, and I reciprocate.

I notice many of the latter type of salesmen "last quick" on the road, for, after all, all practitioners are much alike. We are indifferent to pretty much the same things and so are our clients.

VII. If: If I had my life to live over again, and was entering college this year, I would try the following:

1. Take all the public speaking possible, and learn how to express myself clearly and without confusion while on my feet. Also, I should cultivate a pleasing voice.

2. Learn all I could about amateur photography.

3. Take a course in psychology.

4. Learn how to use the "touch system" on the typewriter, and how to keep books.

5. Take an interest in athletics, college affairs, and enjoy college life.

6. If the curriculum forces us to learn enough to pass a state board, old Mother Experience will take us by our little, lily-white hands, and teach us as we go along. And, Brother, will she "learn" us?

(To be ocntinued)

Soap for the Dog's Bath

Now that soap is scarce and good qualities hard to obtain attention to making your own is profitable. No special equipment is needed. Take the following:

Petroleum (jelly USP)	5 parts
Wax (paraffin)	4 parts
Alcohol (ethyl 95%)	5 parts
Good laundry soap	15 parts (by weight)

Heat the petroleum, wax and alcohol on a water bath until well mixed, then add the soap which has been cut into fine shavings, and when it is all dissolved the soap is ready for use. It can be poured into a mold and when cool cut into convenient pieces for storing. This soap will give a luster to the dog's coat that improves with brushing and rubbing. It will kill vermin and can be used on man or beast.

The addition of 1% of DDT is said to make the animal's coat louse and flea repellent for two to three months.—*L. R. Palmer.*

Acid and Chlorine Proof Floors

Do you want an acid and chlorine proof wood floor in your hospital? If you do and if you have an uncovered wood floor you are very fortunate, for this is what you can do, or have done, and have a very fine floor immediately and at little expense. It will not cost as much as linoleum or tile and the finish can be renewed as often as need be, either entirely or in spots. Also the material is available now and you need not wait.

Take six pounds of wood tar and twelve pounds of rosin. Place these in a large can or kettle and melt together. Then stir in eight pounds of finely powdered brick dust and keep stirring until the whole is thoroughly mixed and you have an excellent wood paint.

Have all broken places and holes in the wood filled with dry wood filler which is available on the market and see that the wood is clean and dry. Apply a thin coat of the paint while it is still warm. After the surface has dried you can decide whether or not a second coat is needed.

A fifty pound lard can with a close fitting lid is an excellent container for this paint. The paint can be made right in such a can from the beginning and then covered with the lid and kept for future use.

This paint, like all paints, will wear off from use. But as has been pointed out, it can be renewed easily. It has other advantages which far outweigh its disadvantages. It is not expensive, anyone can do the work, and it makes a good appearance.—*L. R. Palmer.*

Clinical Reports

Osteogenic Sarcoma of the Tibia of a Dog

A two-year-old male, Labrador retriever developed a growth at the proximal third of the right tibia. According to the owner who brought him in for treatment it had been noticeable for six or seven weeks.

A physical examination revealed atrophy of the muscles over the hip and femur. The growth had a fleshy appearance but on palpation was found to be hard and firm. There was near complete disuse of the limb.

The X-ray revealed much proliferation of osseous tissue around the proximal third of the tibia. That with microscopic sections of a biopsy specimen showed it to be an osteogenic sarcoma.

Preparations were made for amputation through the middle of the femur. The area over the hip, femur and stifle was clipped and shaved; cleaned with soap and water, alcoholic sublimate, tincture of iodine and finally an alcoholic sublimate pack was applied. Nembutal anesthesia was induced.

In performing the operation a lateral and medial flap was made of the skin and soft tissues by two semi-circular incisions down and across the limb to the opposite side. The incisions were made low enough so when the bone was removed at the middle of the femur the muscles and skin would cover over the end of the bone. The incisions through the muscles were shorter than those of the skin to reduce tissue and allow for swelling.

Hemorrhage was controlled by ligation of the larger vessels and use of hemostats on the smaller arteries. The soft tissue was dissected away from the bone where it was to be removed. The bone was severed with a bone saw and the ends of the muscle were sutured with chromic catgut over the end of the bone. Several mattress sutures united the skin leaving an opening at the bottom for drainage. Sulfanilamide was dusted over the stump and a bandage applied.

An intravenous injection of 150cc of 5% dextrose and saline solution was administered after the operation.

After-treatment consisted of 23 grains sulfathiazole *per os* on each the following three days, and 15 grains the fourth day. Also a rebandaging with sulfanilamide pack the second day after amputation. Ten days later the dog was released, in good condition.

VERYL WALSTROM

Spencer, Iowa

Intestinal Prolapse Following Laparotomy

Post-operative rupture of an abdominal incision resulting in prolapse of the abdominal content is not an infrequent occurence among small animal cases. This unfortunate complication has usually been attributed to the giving away of sutures, unusual straining of the patient, infection of the wound, formation of a hematoma, or failure of the healing process due to predisposition, age, disease, autoevisceration or other factors. Some workers believe that of the many etiological factors in wound disruption, the most important one is a defect in the closure of the peritoneum.

A short time following the onset of labor a Dalmatian bitch was presented for cesarean section. Ether anesthesia was used with the subsequent successful delivery of three viable pups and a dead one. The incision was closed in the usual manner and an ordinary spay pack and bandage applied. The only abnormal feature noted during the entire operation, was an unusually accentuated period of excitement shown by the bitch while recovering from the effects of the anesthesia.

On the fifth day following the operation, an intestinal prolapse, through the abdominal incision, was noted. Closer examination revealed a tear about 2.5 inches in length in the peritoneum and anterior to the incision in the abdominal wall. The intestines came through this new tear, then back over the peritoneum to the incision in the abdominal wall and subsequently through a broken suture in the skin.

The previous sutures were removed, the intestines were replaced in the abdominal cavity, and the peritoneum was sutured separately including the new tear. The two muscle layers were sutured next. The innermost layer was sutured to the peritoneum. The skin was sutured with interrupted stitches.

During the operation warm normal saline was applied as well as surgical sulfanilamide powder. Ether anesthesia was used with a finishing off application of chloroform due to the great degree of excitement the bitch showed while recovering from the previous anesthesia. One cubic centimeter of metrazole was given subcutaneously during the operation. A many tailed bandage was applied to cover the whole abdomen, and the puppies were fed by formula.

During the 48 hours immediately following this second operation 30,000 units of penicillin was given intramuscularly, and 30 grains of sulfathiazole was administered *per os*. On each of the succeeding five days the wound was redressed, using iodoform and boric acid

powders, and re-applying a many tailed bandage. On the seventh day following the second operation, the stitches were removed, an ordinary spay pack and bandage applied, and dog returned home.

Another case of similar interest resulted following the spaying of a queen. Immediately after the operation the animal was stricken with excessive emesis. During this period an intestinal prolapse occurred through the abdominal incision. The protruding intestine, omentum, and fat were washed with warm physiological saline, and surgical sulfanilamide was applied. The incision was resutured, a sulfanilamide pack administered, and an ordinary abdominal spay bandage used. The animal was kept warm immediately thereafter. During the five days which followed the wound was redressed daily, 20,000 units of penicillin being administered intramuscularly and 30 grains of sulfathiazole *per os*. The stitches were removed on the fifth day. The bandage was removed three days later.

The role of penicillin and sulfathiazole cannot be accurately determined in these two animals, but both were surely of material benefit for neither animal showed a marked temperature change, and both made rapid and splendid recoveries.

LORENZ L. BEUSCHEL

Sidney, Mont.

Delivery of a 150-Pound Calf

A call came to attend a case of dystocia in a cow. On arrival I found an enormous calf with the head and one foreleg well into the vagina. The other foreleg extended back along the calf's body. The calf was almost dead. The neck was severed at the external os and the body forced back and with considerable difficulty the leg brought forward. A great deal of traction was required but the fetus was delivered without serious injury to the dam.

The calf weighed 150 pounds without the blood which it lost when decapitated. This was the largest calf, at birth, that I have seen in 37 years of practice. Has anyone ever delivered a larger calf?

M. J. HADDER

Mecosta, Mich.

Comment: In the *Veterinary Record* of Jan. 10, 1920, Mr. Geo. Eaton, M.R.C.V.S., reported a shorthorn calf, which was born alive, and weighed 140 pounds at birth. In the same publication for Jan. 17, 1920, Mr. C. A. Powell, M.R.C.V.S., also reported the delivery of a shorthorn calf weighing 160 pounds. In the same communication he reported delivery of twin calves, the combined weight of which was 190 pounds.

In the *Veterinary Record* for February 16th of the current year, Mr. F. B. Edwards, M.R.C.V.S., reported the delivery, without harm to the cow, of a Holstein-Fresian calf weighing 118 pounds. The following week, Mr. G. S. Muir, reported a calf weighing 151 pounds in a cross-bred Holstein-Fresian, first-calf heifer. He was unable to deliver this calf and the heifer was slaughtered immediately. A second report in that issue of the "Record" by Mr. R. G. Swift, M.R.C.V.S. was of a calf weighing 152½ pounds which he delivered (dead) from a heifer. The delivery required only 10 minutes and the heifer suffered no ill effects from it.

Lymphocytoma in a Milk Cow

Treatment was requested November 14, 1945, for a 10-year-old Holstein-Friesian cow that had been off feed for two weeks. She had calved six weeks previously.

Examination revealed: heart action slightly faster than normal, rumination normal and slight reaction of the urine to the Ross test.

A blood count showed: eosinophils 3, basophils 0, stabs 4, segmenters 31, lymphocytes 51 (large 0, atypical 47, and small 4), monocytes 9.

There was little indication of lymphocytoma in the blood picture.

No diagnosis was made. The animal was given 1000cc of 25% dextrose solution intravenously.

There was no change by the following day and five grains of strychnine sulfate was given *per os* in a capsule. This treatment was repeated the following day.

November 9th, the fifth day after the cow was first seen a second Ross test of the urine was made. The reaction was negative. No improvement whatsoever occurred during the following week.

November 27th cow died.

A necropsy was held and the following lesions were discovered:

1. A large, irregular mass of greyish-white tissue covering the auricles of the heart. It was mainly on the surface with some infiltration of the cardiac muscle fibers. The ventricles did not seem to be involved except the chordae in the left ventricle.

There were no other abnormalities in the thorax.

2. The rumen appeared greatly distended and when opened water and feed literally gushed from it. There was a considerable amount of roughage in the rumen considering the animal had not eaten for four weeks.

The rumen, reticulum and omasum were normal in appearance.

3. The wall of the abomasum was three to five times the normal thickness and a mass of tissue three inches in diameter and six inches in length appeared to occlude the orifice completely; thus accounting for retention of ingesta in the rumen.

The small intestines contained very little ingesta but were moderately filled with gas.

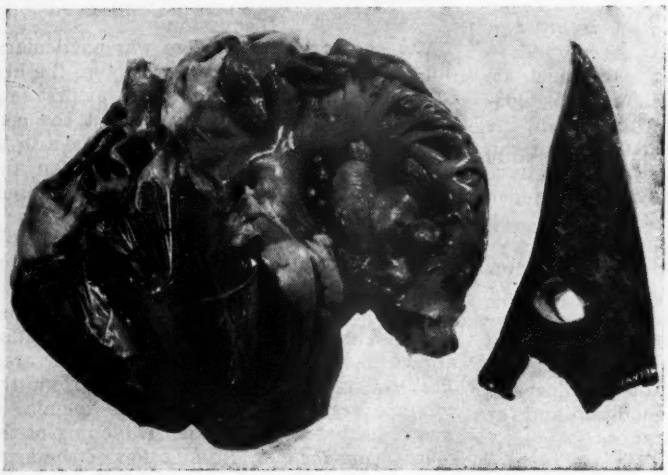
M. N. McGOWN

Monett, Mo.

Endocarditis in a Steer

A grade steer, weighing 800 pounds, was brought into the Clinic in a trailer about 10:00 a. m., August 10, 1945, with a history of having difficulty in grazing. It would graze for a time and then have to rest. This condition had obtained for about 10 days.

The steer was unable to stand and had a marked jugular pulse, evident edema in the brisket region, subnormal temperature, only one heart sound audible with the phonendoscope and was very anemic.



Appearance of the heart and liver (sectioned) in the case described in a steer

The condition was diagnosed as traumatic pericarditis.

About 9:00 p. m. of the same day, the steer died. Upon post-mortem examination several gallons of fluid were found in the thoracic cavity. Further examination showed that the heart had a growth equal in diameter to a baseball and fully one inch thick on the tricuspid valve. A small hole about ⅛-inch in diameter was the only passage way for the blood from the right atrium to the right ventricle. The liver showed a marked passive hyperemia and fatty changes, evidently due to damming back of the blood in the venous circulation.

According to the literature, endocarditis is not at all common in cattle, and therefore it may easily be confused with pericarditis.

R. HARDIN

Lebanon, Ind.

Hemotoma in Thoracic Cavity of Dog

A two-year-old, male pointer was brought in for treatment, October 2, 1945. Three months previously the owner had paid a very large sum for this dog. The history was that the dog had been coughing for the past month and had been depressed for the last couple of days.

Examination revealed a hacking cough, congested mucous membranes, a temperature of 103.5° F., and very slight rales over the lungs. A fluoroscope examination of the thoracic region failed to reveal anything of significance.

The dog was given 10cc of polyvalent anti-bacterial serum followed by 10,000 units of penicillin, intramuscularly, four times daily. After three days, the dog showed no improvement. Sulfathiazole, 7.7 grains *per os* four times daily, and 30 grains of sulfapyridine sodium, intravenously once daily, was added to the above treatment. The Sulfapyridine sodium was given in 150cc of 5% dextrose and saline. The breathing was becoming somewhat difficult so the administration of 0.01 grain of atropine, subcutaneously, every six hours, was begun at this time. Liver extract, 2cc, was given on alternate days.

The dog became continually worse, so on the 11th all treatment except vitamin capsules and forced feeding of raw liver was suspended.

The dog died on the 13th and the autopsy revealed the following: A small abscess in the right apical lobe, extensive consolidation throughout the lungs and adhesions of the diaphragmatic lobes to the diaphragm. Directly to the right of the heart there was a large, well organized blood clot. This hema-

toma was the same size as the heart and directly lateral to it so that the fluoroscope did not reveal its presence. The capsule of this hematoma was well developed. It is shown after being opened, in the accompaning illustration.

While the immediate cause of death was apparently a pneumonia, the hematoma was probably a predisposing factor. However, no satisfactory explanation as to its effect in the pathological processes is attempted.

REID ERGLARD

Tompkinsville, Kentucky

Spontaneous Rupture of the Jugular Vein

A nine-month-old, black cocker spaniel was brought to the hospital Aug. 25, 1945, suffering from what was believed to be poisoning.

The dog had been leashed to a wire run in the yard. At noon it was called to its feed. Upon approaching the feed it suddenly collapsed without any convulsive or spasmodic movements. It regained its feet feebly and vomited. The owner brought the animal to us immediately. Upon being questioned, he stated that the dog had been behaving normally and that it played with his child in the yard. Because it was chained to a wire run the owner did not believe the dog could have come in contact with any garbage. He added that the dog pulled hard on its leash.

Symptoms

The temperature was 100.1°F. The visible mucous membranes were slightly anemic. There was excessive salivation of mucin consistency and not frothy. The dog showed marked depression and general weakness. The eyes were dull and the respiration shallow and rapid. The coat was in good condition and the animal had a well fed appearance.

Treatment

A 1% tannic acid solution was made up for a gastrointestinal lavage. The dog was washed through three or four times. Upon the first vomitus a milky, watery substance was given up along with whole kernels of corn. Nothing other than a few kernels were removed per rectum. Five minutes elapsed before it was noticed that the dog was trembling and extremely weak. Upon further examination of the mucous membranes of the mouth and eyes, extreme anemia was shown. The dog was now going into convulsive movements of clonic character. Adrenalin 1cc was given intramuscularly. Amphetasul, saline and dextrose were given intravenously five minutes after onset of symptoms. Death ensued and it was noted that respirations and heart action stopped almost simultaneously.

Necropsy

This was limited to the thorax and abdomen. The gastric organs, with the exception of slight congestion of the splanchnic area, showed no abnormality. The intestines were slightly congested. The entire digestive tract was opened and no abnormal lesions were observed there.

Lungs and heart were normal.

At the anterior entrance to the thorax a small coagulated mass of blood of about the size of a golf ball was found. It was surrounded with a thinner bloody fluid. This mass was exerting pressure on the surrounding structures; i. e., the recurrent laryngeal nerve, the vago-sympathetic trunk and blood vessels. The mass, which was located on the left side, was adherent to the jugular vein. Clearing away the coagulated blood disclosed a circumscribed aperture of about 0.5cm in diameter in the wall of the jugular. Peculiarly enough, a fibrous ring surrounded it. No other lesions were found.

Discussion

The diagnosis in this case was particularly difficult. It had to be made purely on the history and clinical symptoms which at first suggested some type of poisoning, but the correctness of this supposition would have to be definitely based on further examination and necropsy, upon which an entirely different situation presented itself.

The immediate cause of death is attributed to shock. The blood clot in the area associated with the vago-sympathetic exerted a stimulating pressure on this nerve trunk. The stimulation of the vagus would inhibit heart action and cause vasodilation of the splanchnic area. This in turn withdrew the blood from the cephalic region, causing cerebral anemia, as was indicated by the sudden blanching of the mucous membranes. Stimulation of the sympathetic fibers traveling toward the anterior would cause the secretion of thick saliva containing much mucin and also vasoconstriction of the vessels of the head, which did not help the situation induced by the blood already drained to the visceral region.

What would cause the jugular to rupture? Parasites such as Spirocerca or Dirofilaria somewhat off the beaten path and thrombosis might have caused it. There were no external lesions or wounds, so traumatism must be ruled out.

A congenital defect would show up under undue strain. A history of the dog pulling on the leash and a fibrous ring of fairly long standing suggest this as a probable cause.

ROBT. P. LITT

Chicago, Ill.

Staphyloma in the Dog

September 28, 1945, a two-year old Pekingese was brought to the hospital for treatment. The history revealed the animal had been popped in the eye with hot grease and, upon examination of the cornea, a very large ulcer about 3/16 of an inch in diameter was observed.

The eye was anesthetized with butyn sulfate (2%), and two drops of a 2% solution of fluorescein were instilled into the conjunctival sac. The fluorescein acted as an indicator, but no small ulcers could be detected, only the large ulcer was present. Butyn sulfate (2%) and metaphen (1,300) ointment was dispensed and the owner was told to use hydrotherapy three times daily and apply butyn-metaphen ointment after each treatment.

October 3, the animal was brought back to the hospital for a check. The eye looked about the same except that many blood vessels were migrating around the ulcer margin. More butyn-metaphen ointment was dispensed and the owner was told to continue the above treatment and return in seven to ten days for another check.

October 19, the animal was again admitted to the hospital. The eye looked much worse, erosion in the ulcer had continued and now there was a prolapse of the descemet's membrane. The eye was again anesthetized with a 2% butyn sulfate solution, and the membrane of Demours was punctured with a 22-gauge hypodermic needle and with a syringe a large portion of the fluid was withdrawn from the anterior chamber of the eye. As soon as the fluid was removed and the needle withdrawn, the prolapsed membrane receded back through the aperture in the overlying layers of the cornea. The ulcer margin was then cauterized with a 75% silver nitrate stick and washed with physiological saline. Butyn sulfate and metaphen ointment was given to the owner to apply and he was told to return the animal in three days.

October 22, the dog was returned to the hospital. The eye looked better. The membrane had stayed in place. The owner was told to continue the same treatment and to return again in 10 days.

On November 1, the dog was returned to the hospital, the eye looked very well. The ulcer had healed completely leaving a white scar on the cornea. But time would eliminate most of the scar tissue, as it would shrink in size.

The butyn sulfate and metaphen ointment acted as an anesthetic and antiseptic to the eye. The hydrotherapy was used to stimulate circulation in the affected part. The silver nitrate stick used to cauterize the margin of the ulcer stimulated healing. Even if the scar tissue doesn't shrink to almost invisible size, the animal's vision will not be impaired for, after all, it doesn't have to read the daily newspaper.

Is it worth mentioning that neither sulfa drugs nor penicillin was deemed indispensable to the successful treatment of his case?

DALE CRAWFORD

Overbrook, Kans.

Lead-Arsenic-Phosphorus Poisoning in a Cow

March 16, 1946, about 7:30 p.m., a call came to see a Jersey cow, about seven years of age and weighing approximately 800 pounds. She was in good flesh and had an 11-day-old calf. About one hour earlier she had eaten what was stated to have been not more than a handful of cornbread and dairy feed, with which had been mixed "a dash of" arsenate of lead, a teaspoonful of ant poison (arsenic) and a "little" rat poison containing phosphorus. This had been intended for a stray dog. At this time, the cow was quite normal in appearance. She ate her usual dairy feed just prior to eating the poisoned bait.

Although it was doubted that sufficient poison had been ingested to cause serious poisoning, it was deemed best to take no chances and the following treatment was administered. Ten grams of sodium thiosulfate in 15cc of water were given intravenously and about two ounces of sodium thiosulfate with four ounces of magnesium sulfate in a quart of water were given via stomach tube, after first having made an unsuccessful attempt to siphon out some of the stomach contents. The owner was advised to restrict the drinking water till noon of the following day and report developments. A favorable prognosis, shared by the owner, was given, since the amount of poison ingested was believed to be small, the antidote was given early, and the cow was in the best of health and in good condition.

At noon the next day the owner reported that the cow appeared to be about normal but she only ate a bite or two of feed that morning and would drink only one bucket of water. She gave the usual amount of milk, but displayed little interest in grazing. Otherwise she seemed bright and alert. We did not see her that day but called early the next morning.

This morning (18 March) the cow was much depressed with complete anorexia, watery, fetid feces and no rumination, but the heart action and pulse were full, strong and regular. The milk flow had practically ceased. At this time 6gm sodium thiosulfate, in 15cc

water, was given intravenously along with 250cc of a 50% solution of dextrose and 250cc of calcium gluconate solution (23%). Two ounces of sodium thiosulphate was given.

By noon the only change was that she seemed weaker and fell down when her head was taken hold of to drench her. Considerable trembling of muscles was noted, but no mental disturbance was apparent. Watery diarrhea was pronounced, ¼ grain atropine sulfate and ¼ grain strychnine sulfate were given subcutaneously. Four ounces sodium citrate in a pint of water was given as a drench. A solution of nux vomica was left with instructions to give the equivalent of one dram of the fluid extract every three to four hours. Also additional sodium thiosulfate was left to be given later and about two ounces each of tannic acid and alum along with six 30-grain tablets of sulfocarbolates compound and four grains of acriflavine were combined in a drench to be given by the owner for control of the enteritis. An attempt was made to get some potassium fluoride as suggested by a report on experimental arsenic poisoning in the *Jen-Sal Journal* but none was available locally.

In driving past the farm about 6 p.m. of the same day (48 hours after consuming the poisoning) it was found that owner had not yet given the medicines left with her so they were given at this time, and 250cc of 50% dextrose was given intravenously, also one quart of melted lard as a drench and ¼ grain each of strychinine sulfate and atropine sulfate subcutaneously. Another drench of approximately 1½ ounce, each, of tannic acid and alum plus 150 grains sulfocarbolates compound were left to be given by owner the next morning. The cow appeared dull, weak and wobbly; drank some water but refused all feed. There was involuntary movement of fetid, dark, liquid feces, but there was no blood apparent in it. The cow was catheterized. The urine appeared normal on gross examination.

About noon of 19 March, the cow was again examined. At this time, she was down, unable to rise without lifting on the tail. There were bloody streaks in the dark, liquid feces, that passed more or less involuntarily. The cow was very gaunt, the eyes sunken but she was still fairly alert. The owner had given nux vomica (two doses) and the sulfocarbolates, tannic acid and alum mixture. A similar dose was given at this time and an additional one left for evening medication. Dextrose solution (200cc of 50%), 5cc Am Pent of ½ grain of strychinine, ¼ grain of atropine, 10cc of camphorated oil, and one quart of black coffee were given. Feed and salt were refused. About three gallons of water were drunk during entire day of the 19th. There was no apparent "lead line" on the gums. The owner gave the cow two quarts of milk, six raw eggs, one pint of coffee, nux vomica (equivalent one dram F.E.) as a drench about every four or five hours, starting the evening of 19 March. At noon of the 20th the cow was down, unable to rise, very restless but not groaning or bawling. The pulse and respirations were weak and accelerated, feces still liquid and bloody, but not as copious as previously. She could still hold her head up and made feeble attempts to rise. She had been on her feet that morning. The following was given subcutaneously: 10cc camphorated oil intramuscularly; ½ grain strychinine, ¼ grain atropine and 15 grains caffeine sodio-benzoate in solution. One hundred fifty grains sulfocarbolates compound was given in a pint of water as a drench. At 4:30 p.m. that day the cow died, not quite four days from the time of consuming the poison.

Udall in his "The Practice of Veterinary Medicine" (1943) states that while lead arsenate contains arsenic, its toxic action is due to the lead. He also says that the chemical antidote for lead is dilute sulfuric acid or the sulfates such as magnesium or sodium sulfate. He mentions chloral hydrate to control any excitement. None was manifested in this case. He also mentions camphor, strychinine, liquid petrolatum, bismuth subnitrate, tannic acid, aromatic spirits of ammonia, sodium citrate and atropine sulfate. He states the mortality is high, often 100%.

In arsenic poisoning, sodium thiosulfate seems to be the antidote of choice; 20 to 30gm in 300cc of water orally and eight to 10gm of a 10 to 20% solution intravenously has been suggested. Tannic acid, bismuth, caffeine, sodium benzoate, camphorated oil, black coffee and atropine are also recommended.

The antidote for phosphorus is a weak solution of copper sulphate or other oxidizing agent. In this case it was thought that little if any of the toxic symptoms were due to phosphorus and no antidote was given specifically for this poison.

Several mistakes are noteworthy in this report. The first was the owner's, the second was the cow's, and the third was that (or those) of the veterinarian. It appears that one is probably never justified in making a favorable prognosis where lead arsenate has been ingested in uncertain dosage by a cow.

References

1. Landers Veterinary Toxicology, 1945.

2. Milks, H. J. Veterinary Pharmacology, Materia Medica and Therapeutics, 5th edition, 1943. Alex Eger, Chicago.

W. H. LINDLEY

Vicksburg, Miss.

Abstracts

Control of Diseases in Sheep

The author[18] summarizes his finding by stating that copper in the nutrition of the pregnant ewe is important. Since the discovery of the efficacy of carbon tetrachloride in the control of the liver fluke, there has been a tendency to disregard the problem of fluke infestation. True braxy, is confused with a form of *Cl. chauvoei* infection causing deaths without blackleg lesions, thus the value of braxy vaccine is thereby falling into undeserved disrepute.

A good shepherd never has foot rot in his flock, but there are many poor shepherds. By rigorous attention to flock management and the use of proved specific prophylactics, the health of the sheep can be improved very considerably and mortality from disease reduced.

Malayan Virus Disease of Fowl

The authors[29] investigated the diagnosis of the virus disease outbreaks. An epornitic disease of fowls of all ages which spreads with extreme rapidity in infected flocks and is associated with a mortality of from 90 to 100%, has been present in all parts of Malaya for many years. Various strains of virus occur or the virus is subject to mutation as a result of certain conditions of passage. Such mutations affect the pathogenicity of the strain for pigeons and the production of diphtheritic lesions. The symptomatology is concerned with acute and subacute forms of the infection and their sequels. The onset of the disease is accompanied by symptoms indicative of general depression: feathers ruffled, wings relaxed and drooping, eyes frequently closed, and the fowl in a crouching posture, resting on its metatarsals. In the early stages the bird, if disturbed, may appear quite bright momentarily. Cyanosis of the comb and wattles occurs in the majority of infected cases. During the course of the disease there is a profuse diarrhea, the excreta being greenish white or yellowish white in color and of a most offensive odor. The temperature may be elevated to 111°F. Rapid wasting occurs; the decrease in body weight being very marked during the short acute course of the disease. Petechiation and hemorrhagic infiltration of the proventricular mucosa are constant lesions, except in peracute cases. Cross-immunity tests were conducted at the same time, from the result of which it was concluded that the virus is immunologically identical to three other strains of local origin. The latter strains were obtained from outbreaks in which the incidence of lesions on the buccal and pharyngeal mucosa was high.—*A. H. Bryan.*

Enzootic Staphylococcus Infection Associated with Tick-Bite in Lambs

The author[30] presents clinical reports of a specific, enzootic staphylococcus infection in lambs of various breeds which occurs on tick-infested farms throughout Britain. This infection is characterized by the development of suppurative foci in different parts of the body including the skin, musculature, tendon sheaths, joints, viscera and meninges. In addition to the pyemic form of the disease, an acute infection also occurs, the diagnosis of which can be made only by bacteriological methods. The disease frequently co-exists with other infections such as louping-ill, lamb dysentery, pulpy kidney disease, and tick-borne fever.—*A. H. Bryan.*

Immunization Against Hog Cholera

A large-scale trial[27] at the Weybridge Veterinary Laboratory is reported which was designed to determine the antigenic value of the crystal violet vaccine against hog cholera under normal farming conditions. Injection of this vaccine into susceptible pigs of any age over three weeks did not cause illness or abnormality and produced an immunity of high order effective for about 12 months.

Pigs born from sows vaccinated before or during pregnancy may be satisfactorily immunized whether they are vaccinated while suckling or after weaning, although there was some evidence that with pigs vaccinated while suckling the degree of immunity tends to fall more quickly than with pigs vaccinated after weaning.

No antigenic differences were found in the various strains of hog cholera virus. Vaccine prepared from the virulent American strain of virus protected pigs against naturally occurring hog cholera caused by English strains

[18] Rowlands, W. T. A few observations on the control of diseases in sheep. *Vet. Rec.*, 57:44, pp. 489-491. 1945.—*A. H. Bryan.*

[29] Orr, W., and John K. T., A Malayan virus disease of fowls, *Vet. Rec.*, 58:11, pp. 117-119.

[30] McDiarmid, A., Studies on enzootic staphylococcal infection in lambs associated with tick-bite, *Vet. Rec.*, 58:10 pp. 103-104. 1946.

[27] *J. Min. Agr.* (Gt. Brit.), 52:8, pp. 374-376. 1945. Abst. in *Exp. Sta. Rec.*

of the virus. English strains of hog cholera virus differed in their virulence, but on the whole were less virulent than the American strain used in the production of the vaccine.

Symptoms of Brain Lesions

The author[28] concludes that the important signs of cerebral disturbance in the horse though not specific are newly acquired irritability of temperament — kicking, laying back the ears and shaking the head and suddenly falling, without such apparent cause as stumbling or slipping and amaurosis. A dog or a cat may walk in a small circle, or with the head turned to one side or semi-rotated on the long axis of the neck. It is presumed this is due to cerebral pressure. Many such cases yield to treatment. Amaurosis associated with distemper also may arise from affection of the central nervous system.—*A. H. Bryan.*

Phenothiazine Trial in Calves

A trial[25] to demonstrate, under normal farm management conditions, the beneficial action and toxicity of phenothiazine for yearling calves was made. Varying doses of phenothiazine (from 40 to 100 gm) were given with no untoward effect. Certain concurrent conditions of management, nutrition and weather, gave rise to a severe and acute parasitic gastroenteritis which was not prevented by dosing with phenothiazine. Fecal egg-counts failed to indicate heavy infestations, which were revealed only by post mortem worm counts. Variations in individual susceptibility were found. The dosed calves eventually progressed better than the controls, as judged by appearance and by weight gains.

Retained Placenta in Water Buffalo

The author concludes[23] that allowing calves to suckle their dams is beneficial in every way as it reduces the incidence of retained placenta very considerably and it, therefore, reduces metritis from this cause. It also leads to an increased milk yield and, probably, increases the likelihood of calf survival. Involution is accelerated and the risk of metritis is greatly lessened by the suckling of the calf. The high incidence of retained placenta met in Lahore Farms seemed to be predominantly a physiological atony of the uterus due to a change in management from previous parturitions. In this area the practice of allowing calves to suckle their dams instead of weaning them at birth has resulted in a considerable drop in the incidence of retained placenta in buffaloes. Therefore, the incidence of metritis which is a usual sequel to retention of placenta has dropped correspondingly.

Estrogenic Induction of Lactation in Cattle

The subcutaneous implantation of synthetic estrogens, using tablets of varying sizes was performed on 13 maiden heifers and six dry cows.[22] Different dosages of diethylstilbestrol and hexestrol tablets were employed and their approximate rates of absorption estimated. Fifty 50mg tablets, implanted for not more than 60 days, is the optimum dosage. Certain changes in pelvic morphology, typical of the nymphomaniac condition were induced by implantation in some animals. The hypererotic manifestations largely disappeared at the cessation of treatment, and were considerably lessened in intensity by the isolation of the animal. The normal estrous rhythm was frequently not restored until several months after removal of the tablets. The subsequent fertility rate was poor, only four of 13 animals served becoming pregnant.

Stilbestrol Dipropionate in Canine Practice

About 50 cases of neoplasia[24] in the perineal region of the dog have been treated. Oral administration alone has in most cases produced uncertain and disappointing results. Subcutaneous injection alone, however, produced definite and substantial effects on certain types of neoplasms. In old, debilitated dogs, prostration, collapse and, in rare cases, death, may follow full dosage of the drug over a period of several weeks. The weekly dose of stilbestrol should not exceed 5mg in senile patients. In bitches, small repeated doses produce swelling of the mamae and lactation, usually without signs of heat. A large dose (20mg) generally causes enlargement of the vulva at about the fourth day, with signs of heat and a marked willingness to accept service.

---

[23] Wright, T. L., Some clinical signs of brain lesions, *Vet. Rec.*, 58:11, pp. 119-121. 1946.

[25] Bruford, J. W., and Fincham, I. H. A phenothiazine trial in calves. *Vet. Rec.*, 57:37, pp. 421-424. 1945.—*A. H. Bryan.*

[23] Vinattieri, E., and Hayward, A. H. S. Retention of placenta in the Buffalo, with associated sequels, 7 tables. *Vet. Rec.*, 57:46, pp. 509-514. 1945.—*A. H. Bryan.*

[22] Spriggs, D. H. Some observations on the estrogenic induction of lactation in cattle. *Vet. Rec.*, 57:47, pp. 519-525. 1945.—*A. H. Bryan.*

[24] Smythe, R. H. Some further notes on the use of stilbestrol dipropionate in canine practice. *Vet. Rec.*, 58:7, p. 75. 1945.—*A. H. Bryan.*

FOR DEPENDABLE PROTECTION
against
INFECTIOUS FELINE PANLEUKOPENIA
(Feline Distemper)

SPECIFY

Packages
ANTI-FELINE DISTEMPER SERUM
10 and 50 cc. vials
FELINE DISTEMPER VACCINE
2 - 2 cc. vials
10 - 2 cc. vials

FELINE DISTEMPER VACCINE *Lederle*—a formalinized tissue virus suspension, prepared from tissues recovered from kittens infected with highly virulent, antigenic strains of virus—recommended for active immunization.

ANTI-FELINE DISTEMPER SERUM *Lederle*—a specific homologous anti-viral serum obtained from mature cats hyperimmunized by repeated injections of live virus—recommended for passive immunization; and therapy, when administered early in adequate dosage.

Each lot of vaccine and anti-viral serum is animal tested to assure uniform potency and dependable performance.

Listen to the latest developments in research and clinical medicine discussed by eminent members of the medical profession in the Lederle radio series, "The Doctors Talk It Over," broadcast coast-to-coast over the American Broadcasting Company network every Tuesday evening.

LEDERLE LABORATORIES, INC.
A Unit of American Cyanamid Company
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Here are the results of a field survey on B.T.V. and Crystal Violet, conducted by the outstanding paper in the Cornbelt, *Successful Farming*. It answers many of the questions on field results you may have been wondering about; and appears here through the courtesy of Cutter Laboratories.

New Cholera Vaccines Make Continued Gains

by C. E. Hughes and Russ Cunningham

"Say, Doc, gimme some of that worm medicine; and then I wanta talk to you about my hogs."

"OK, Tom, there you are—now tell me, just what's bothering you?"

"It's that doggone trouble after my pigs get their shots. I've just about decided to quit vaccinating—I'd about as soon run the chance of getting cholera as have the trouble I've had. Lost 10 that way last year!"

"Sit down, Tom—seems like this thing needs a little thought. I think I've told you before you've got what we vets call a 'problem herd.' I suppose one out of every five in this county is that kind — wouldn't be surprised but what that figure would go for the whole Cornbelt.

"I haven't mentioned this to you before because I don't try to push it — I'm not out drumming up business for myself or anything I use — but I've got a vaccine that should handle cases like yours. At least, the batting average has been mighty high since they've been putting the stuff out."

"What kind of stuff are you talking about, Doc?"

"Tom, I'm talking about B.T.V. and crystal violet—a couple of vaccines that are still pretty new in the field, but yet are old enough to have passed the experimental stage. Maybe I shouldn't stick my neck out by even mentioning them—and I wouldn't, either, if you hadn't brought this up—but I think they'll do the job and save you a lot of trouble. I'll be out your way Tuesday, so you may want to think it over."

"Drop in anytime, Doc, I'll be working around there somewhere."

And, with that Tom rose from his chair and clumped across the room. A door slammed.

This actually happened — in the office of an Iowa veterinarian. It could happen anywhere else, and does. Such incidents reflect the progress of a pair of hog-cholera vaccines which rapidly are finding their place in the field of animal health. They have been reported at various times in *Successful Farming* and were featured in the May, 1943, issue. During the past few years, B.T.V. and crystal violet have made rapid strides, both in new territory and in the areas where they have already been used.

Just to give you a few figures, preliminary reports indicate that probably more than a million hogs were immunized with these two vaccines in 1945. In Iowa alone, some 250 veterinarians used one or both of them last year, and twice the number of doses were given in 1945 as compared with the preceding year. For the country as a whole, the use of these vaccines last year increased something like 50 percent.

There are reasons for this jump. One already has been suggested — that herds immunized with either of these vaccines do not suffer postvaccinal reaction like that which occurs when the old standbys, serum and virus, are employed. This advantage is especially pronounced in problem herds like Tom's, where necro or some other form of the enteritis complex may get the upper hand when serum and virus are used. But even with normal herds, B.T.V. or crystal violet does not throw pigs off feed, and they are inclined to get to market sooner.

Another advantage, perhaps even more important, is that these vaccines enable you to avoid use of the live, hot virus. As long as virus is used, the very disease we are trying to control is being reseeded.

This danger is not met with B.T.V. (Boynton's Tissue Vaccine), made thru weakening virus to the safety point by subjecting the internal organs and bone marrow of cholera-sick pigs with eucalypteol. The same may be said for crystal violet, prepared by weakening the virus thru addition of an aniline dye, known as crystal violet. Pigs vaccinated with B.T.V. or crystal violet will not spread the disease to unvaccinated hogs.

A third advantage, one especially appreciated by busy farmers, is the avoidance of special diets when using either of these vaccines. Pigs eating from self-feeders out in the field can go right ahead after vaccination — no need for cutting down on corn, supplement, or anything else. That means no lost time for the farmer — or for the pigs.

But where there's good there's usually some bad, and this case is no exception. It takes 14 to 21 days for complete immunity with either of these vaccines. This is a serious objection in places where cholera is an ever-present risk.

Another disadvantage—no equipment, or even shoes or clothing, used around *serum* and *virus* may be used or worn when working with herds being immunized with either B.T.V. or crystal violet. Thru accidental carrying of the virus, pigs might become infected before immunity could be conferred by the vaccine. Care always should be exercised when handling virus, even when B.T.V. and crystal violet are not involved. Furthermore, it's a bad idea to immunize part of the herd with vaccine and the remainder with serum and virus.

And third, young breeding stock saved from vaccinated litters must be immunized again. Such pigs, vaccinated, as recommended, when 2 weeks beyond weaning age, must be revaccinated when 8 to 10

(Advertisement)

months old because the immunity has been proved consistently only up to six or eight months. That's long enough to protect market hogs, but not breeding stock. Sows and boars must be vaccinated annually. This relatively short period of immunity has kept many a breeder and farmer from adopting the vaccine method.

But despite the disadvantages, figures indicate that these new vaccines are gaining ground. To get some firsthand evidence, we visited quite a number of practicing veterinarians in Iowa and Illinois. We called on some who we knew were using either B.T.V. or crystal violet, or both — and we talked with others who weren't. This was done to get all angles.

One of the most confirmed users of cholera vaccine in the veterinary profession is Dr. G. A. Johnson of Pomeroy, Iowa. Last year, he used serum and virus on only three herds. All the others were immunized with one or the other of the vaccines. Doctor Johnson says that using vaccine in a herd is all the publicity it needs. The neighbors hear the news and start asking for it.

Dr. Frank Young of Waukee, Iowa, has been vaccinating more herds with B.T.V. or crystal violet every year, altho most of his work is still with serum and virus. However, only one farmer in his territory has gone back to serum and virus after once trying the vaccines. This chap did so because he dislikes revaccinating his sows periodically.

Said Dr. W. A. Houk of Muscatine, "The double treatment with serum and virus saved the hog industry from eradication by cholera; now B.T.V. offers hope of ridding ourselves of cholera entirely. Hog lots will not be reinfected every year by virus. I believe that hogs vaccinated with B.T.V. will reach market weights two or three weeks earlier than those subjected to the shock of serum and virus.

"Several seasons ago we stopped a severe outbreak of cholera with B.T.V. We took a strip about a mile wide when vaccinating, and the epidemic didn't cross this zone."

And over in Illinois, Dr. Alfred M. Olson of Morrison said: "I believe that these vaccines will be more generally used every year. They enable veterinarians to keep dangerous virus off farms.

"Farmers with necro or other secondary infection in their lots find B.T.V. satisfactory. Unlike serum and virus, it does not slow up gains."

Dr. L. A. Dykstra of Aurora has conducted several experiments *using both vaccine and serum* with unusually good results. This method not only provides immediate immunity, he says, but also eliminates the use of virus.

When used with B. T. V. or crystal violet, the serum protects the pig from cholera until the vaccines have had time to build up immunity. In this case, as when vaccine alone is used, the hogs should be vaccinated again in six months because the serum-vaccine treatment does not provide permanent protection.

Dr. C. H. Nye of Cambridge also follows this plan of using serum with the vaccine. Said he: "In cases where the farmer is uncertain about what is ailing hogs, I would recommend the use of serum and B. T. V." He feels that the serum will immunize hogs for several weeks until B. T. V. has time to take effect.

But several veterinarians questioned this method. Some expressed fear that the immediate protection secured thru use of the serum would weaken or otherwise impair the immunity later conferred by the vaccine.

To avoid such possibilities, Doctor Dykstra gives the hogs another dose of vaccine a few weeks after the starting shot. But objections have been raised to this practice because it means extra time and effort. And so the controversy goes!

Some of the veterinarians in Iowa and Illinois felt that they couldn't see enough advantage over serum and virus to make the change; others were waiting until these two vaccines had proved themselves more thoroly; still others were fairly certain that the vaccines were real comers but hadn't found the place to use them.

Said one Doubting Thomas, "I've never used B.T.V. Critical experiments with this vaccine indicate that it is not dependable enough yet."

This Illinois veterinarian may have been referring to some cholera-vaccine experiments conducted several years ago at the University of Nebraska. The investigators obtained unsatisfactory results from the standpoint of pigs withstanding exposure to natural infection or injections of virus after receiving doses of the vaccines. (Doses of crystal violet used in these experiments were not government-tested, in contrast to doses sold for use in the field, and some of the lots of crystal violet were contaminated.)

This skeptical veterinarian may also have had in mind the crystal-violet experiments conducted by the Canadian Department of Agriculture in 1943 and 1944. The investigators were not favorably impressed by the ability of hogs, injected with crystal violet, to resist exposure to cholera-infected hogs.

On the other hand, ample experimental evidence to the contrary can be provided. The United States Bureau of Animal Industry hog-cholera research station at Ames, Iowa, cooperating with farmers and veterinarians, has treated with crystal violet some 398 herds containing 23,000 pigs. In all of these 398 herds, only one break has occurred.

The University of California, cooperating with a commercial laboratory, conducted experiments to determine the length of immunity of B.T.V. Results were quite satisfactory, as the tests showed that pigs injected with 5 c.c. of the tissue vaccine were protected for periods up to 202 days. Only a few pigs failed to show complete immunity.

Quite a few veterinarians we visited attested to the excellent protection afforded by the vaccines.

Said Dr. Earl R. Kennedy, Moline, Illinois, "I've used B.T.V. for several years, and vaccinated between 3,500 and 5,000 a year with it. There has never been a failure as far as I know."

Reported Doctor Nye of Cambridge, ". . . I can truthfully say that I've never had any bad results."

And, according to Dr. G. I. Case, Kewanee, "I've used it on about 10,000 hogs in three years, and have yet to have a cholera break."

All of the foregoing discussion adds up to this: The field of veterinary medicine has two comparatively new vaccines which are doing a good job, but they're not 100 percent perfect. And not all is sweetness and light in appraising their worth, since jealousy and commercial rivalry do confuse the issue. Whether these vaccines will eventually drive out serum and virus, merely enjoy a fair degree of popularity, or actually lose the ground already gained is a moot question. Time will answer that one.

(Advertisement)

Classified Advertisements

For Sale, Wanted, etc., $2.50 for 25 words or less; additional words, 8 cents, payable in advance. 25 cents extra when replies are sent in care of VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago. Copy must be received by the 3rd of month.

POSITION WANTED: In horse practice by responsible young veterinarian. Single. Address No. 572 care VETERINARY MEDICINE.

WANTED: One or more veterinarians for medical staff in animal hospital in New York City. Address No. 581, care VETERINARY MEDICINE.

EXPERIENCED practitioner desires assistantship in large animal or mixed practice in Illinois. Would consider buying. Address No. 568 care VETERINARY MEDICINE.

WANTED TO BUY: Experienced veterinarian desires to purchase a small animal hospital or mixed practice in Massachusetts. Address No. 570 care VETERINARY MEDICINE.

HANDY CHARTS—World Dog Map; Terrier Trimming Chart, Sketches of All Amer. Breeds. $1 each, 3 for $2, any ass't. Judy Publishing Company, 3323 Michigan Blvd., Chicago 16.

ASSISTANT WANTED in a small animal hospital in Ohio—experienced and preferably single. Excellent future; practice established 40 years; modern hospital. Address No. 580, care VETERINARY MEDICINE.

POSITION WANTED: Experienced and responsible veterinarian desires an assistantship with a mixed or large animal practiitioner in Illinois. Licensed, veteran, single, references. Address No. 582, care VETERINARY MEDICINE.

WANTED: Veterinary assistant in modern Dog and Cat Hospital in Western Pennsylvania. Give all details in first letter—including a snapshot. Address No. 578, care of VETERINARY MEDICINE.

WANTED: Location in Eastern city for small animal hospital. Will consider buying practice or working for another veterinarian if it leads to partnership or ownership. Address No. 580, care VETERINARY MEDICINE.

WANTED: Experienced or inexperienced veterinarian with ambition, to work in small animal practice. May be recent graduate, with Connecticut license, and B.A.I. registry, or view toward obtaining both. Address No. 579, care of VETERINARY MEDICINE.

WANTED: Settled Veterinarian, preferably single, one who is experienced with small animals and can act as supervisor in hospital. Location Baltimore, Md. Permanent position with salary and commission. Living quarters furnished. Must drive car. Address No. 558 care VETERINARY MEDICINE.

WANTED: Experienced veterinarian on salary and percentage basis near New York in well established practice. Prospects of partnership and ownership. 80% small animal practice. Comfortable living quarters provided. State references, etc. Address No. 575, care VETERINARY MEDICINE.

WANTED: Two experienced veterinarians, Christians, desire to purchase a mixed practice, 75% small animal. Capable of supporting two or more veterinarians. Facilities must be modern—hospital must meet AAHA requirements. Prefer Eastern States. Address No. 577, care VETERINARY MEDICINE.

FOR SMALL ANIMAL PRACTITIONERS: A five-dollar check will bring you postpaid a book containing nearly 150 original drawings answering and illustrating the thousand and one inquiries presented to you by your clientele. The book, entitled "Doctor, please tell me," will find a hundred uses and materially increase your income. Send for your copy NOW—the number is limited. Dr. E. A. Schmoker, Rt. 2, Bothell, Washington.

McKeon's

"Sulpho Dip"

TRADE MARK REG'D

for

Parasitic skin diseases on large and small animals. Safe, economical, effective.

Trial gallon on 30 days' approval—$3.00

SOLD TO VETERINARIANS ONLY

(Fool-proof in hands of laity.)
Sample FREE. Ask for yours.

Sulphur Products Co.
Greensburg, Pa.

Distributors wanted in certain territories.

■

According to Alexis Romanoff of The New York State College of Agriculture eggs may be kept in good condition and fit for table use for a year by dipping them, when fresh, into boiling water for five seconds, air cooling and storing at 40° F. "The flash heat treatment" coagulates a thin layer of albumen next to the shell and protects the contents.

■

Calcium Gluconate
with or without Dextrose

Will not precipitate.
Will not freeze out.

Contains no other Mineral than Calcium.

1 Doz. 250CC.....$6.00
1 Doz. 350CC..... 7.20
1 Doz. 500CC..... 7.80

Curts-Folse Laboratories
71 Central Ave.
Kansas City, Kansas